THE IRON AGE

New York, April 9, 1925

ESTABLISHED 1855 VOL. 115, No. 15

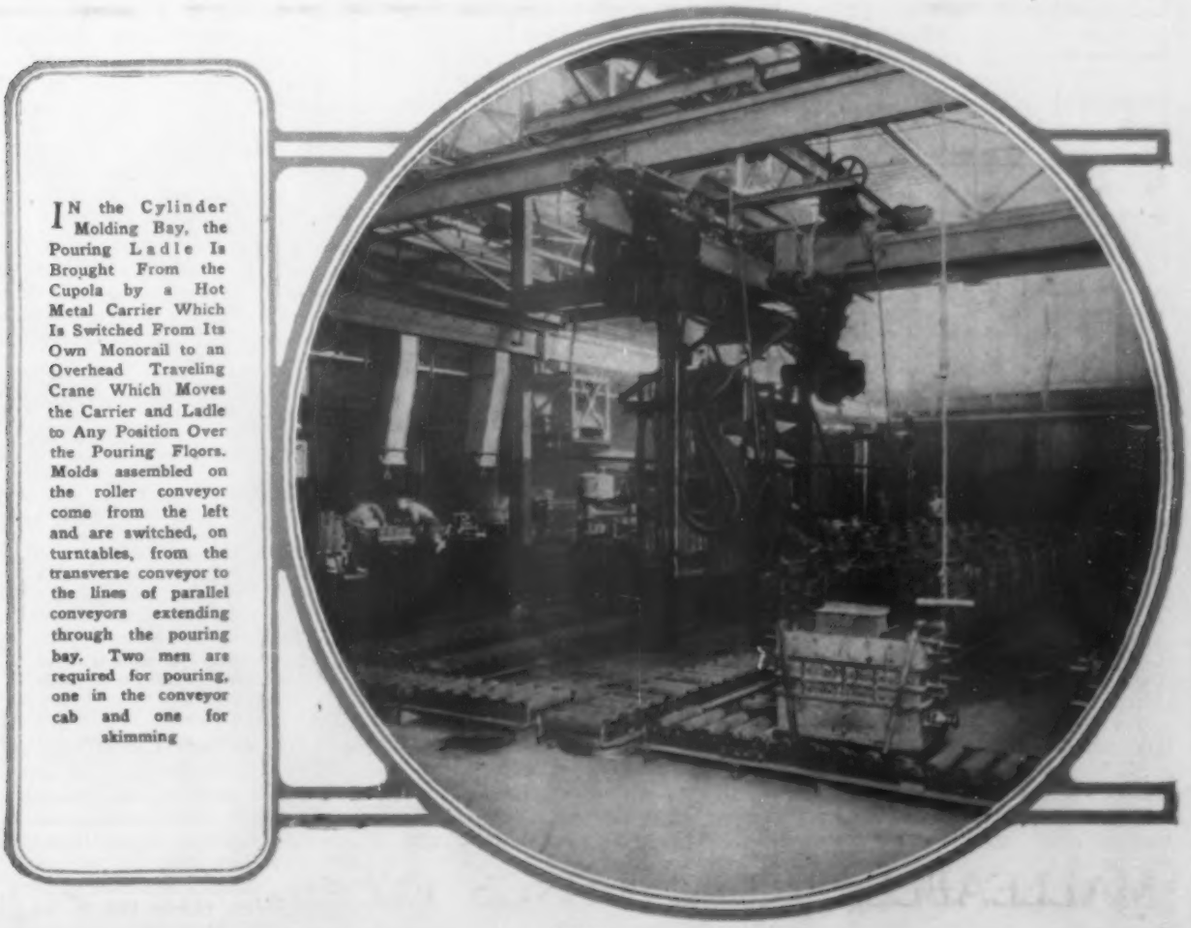
Foundries of Automobile Builder

Cadillac Plant Houses Iron, Aluminum and Brass Units Together—Simplified Supervision and Reduced Overhead Expected

BY FRED L. PRENTISS

THREE new foundries of the Cadillac Motor Car Co., Detroit, represent a most important development in design and arrangement and, from the standpoint of interest, occupy a commanding position in the foundry field. One of the most prominent features is that the three foundries, iron, aluminum and brass, all arranged for continuous operation, are combined in one plant with one sand handling and storage department, a single core making, baking and finishing department and one pattern making and storage department for the three units, effecting economies in operation that are self-evident. This combination also permits merging other plant facilities, such as railroad tracks and service equipment, saves ground space and, from an organization standpoint, the combined management simplifies supervision and reduces overhead.

Outstanding features include labor saving equipment for handling material, convenient arrangement of the different units, ventilation and heating. The use of manual labor has been reduced to a minimum. A conspicuous illustration of this is that core sand is not handled by hand from delivery to plant until it reaches the core maker's bench. An unusual feature of the iron foundry is that it has two independent systems for preparation and distribution of the two grades of molding sand used. Another conspicuous feature is the use



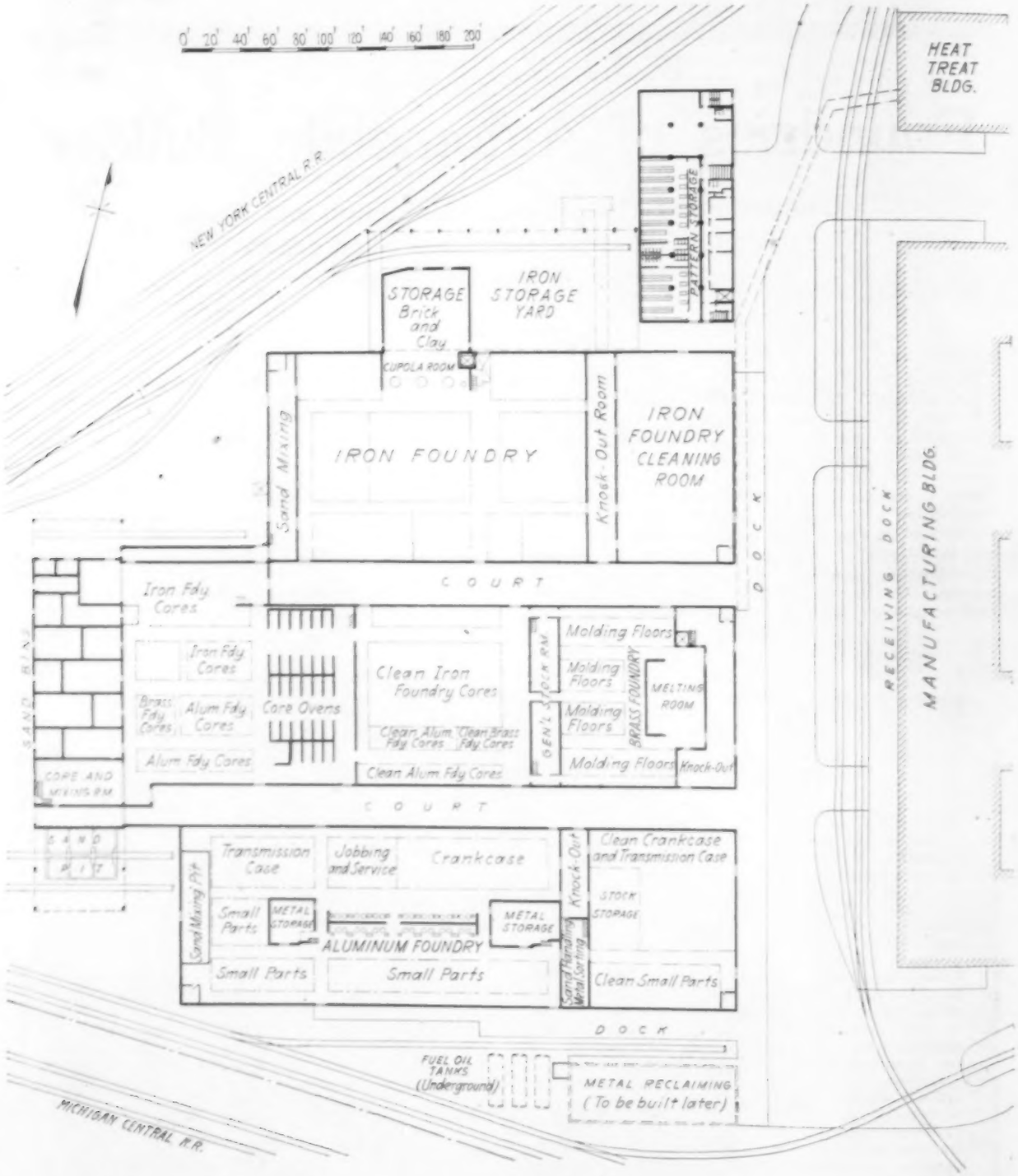
IN the Cylinder Molding Bay, the Pouring Ladle Is Brought From the Cupola by a Hot Metal Carrier Which Is Switched From Its Own Monorail to an Overhead Traveling Crane Which Moves the Carrier and Ladle to Any Position Over the Pouring Floors. Molds assembled on the roller conveyor come from the left and are switched, on turntables, from the transverse conveyor to the lines of parallel conveyors extending through the pouring bay. Two men are required for pouring, one in the conveyor cab and one for skimming

of an overhead monorail system for distributing core sand and in parts of the foundries for delivering sand to the molding floors.

Removal of the entire plant of the company to a new site permitted building wholly new foundries for making all the castings used in the manufacture of the Cadillac car. This foundry plant is the last of the

The plant was laid out, buildings and equipment designed or selected and construction supervised by the Austin Co., in conjunction with the committee. Construction work was started in October, 1923, and the last unit, the iron foundry, was completed early this year.

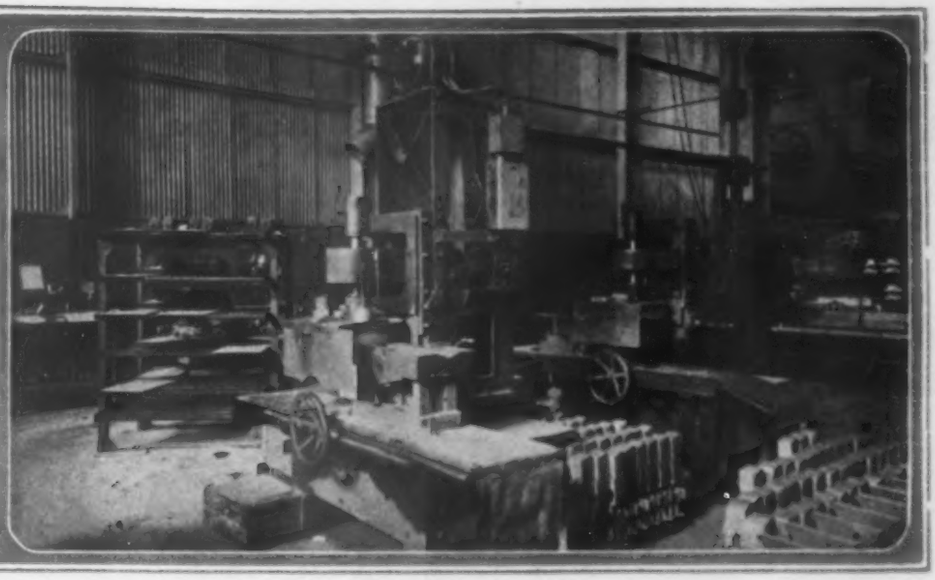
The combined foundry occupies a triangular site



GENERAL Layout of the Plant, Showing Movement from Sand Bins at West Side Through Core Rooms and Molding Bays to Knock-Outs Near East Side. This places the castings near the manufacturing department, minimizes handling and avoids confused cross-currents

large plant units included in an extensive building program inaugurated by the company a few years ago. Before the plans for the plant were prepared, a committee of five, consisting of three representatives of the Cadillac company, one of the General Motors Corporation and another from the Austin Co., Cleveland, engineer and architect for the plant, visited 30 foundries, studying at length the various types and methods of operation and compiling their data in a lengthy report.

bounded on one side by the New York Central and on another by the Michigan Central Railroad. The three main foundry buildings are in a parallel line, separated by 28-ft. courts, and face on the third or east side a large manufacturing building to which the castings are delivered, a concrete driveway separating the two buildings. The foundry buildings, together with the pattern building at one side, form a line nearly 600 ft. long. Extending across the front of the foundries is a loading



SOME of the Special Grinding Machines in the Core Finishing Department for Grinding Jacket, Crank Case and Transmission Cores. Labor is saved and exact thickness is assured by mechanically grinding the flat surfaces of the cores. The core is held in a jig and ground on a horizontal emery wheel

platform 20 ft. wide covered by a marquise. The entire floor space exceeds 200,000 sq. ft.

In the central building are the brass foundry and core department. On the north is the iron foundry, with attached cupola building, and on the south the aluminum foundry. At the front of each foundry unit is its respective cleaning department. The core-making department is centrally located west of the brass foundry, while west of the core room is the sand storage building. Centrally located between the brass foundry and core cleaning room is a general stock room that extends across this building and serves all the foundries. Work and material is generally routed from the west toward the east of the buildings. Cores are knocked out in bays between the foundry floors and cleaning rooms and, after cleaning, the castings pass to the loading dock and are trucked across the driveway to the manufacturing building, which has a similar loading dock. A slight exception to the general direction of routing is found in the brass foundry. In this a basement extends to the front of the loading platform, to which chutes are connected. Copper and other raw material are delivered into these chutes, which feed into basement bins.

Iron Storage and Charging Platform

At the side of the iron foundry the storage yard, 80 ft. x 120 ft., is served by a 5-ton Shaw crane spanning the yard. Raw material is delivered over a railroad siding that extends the length of the yard under the crane runway. This runway extends over the cupola charging floor, that is 56 x 60 ft. The charging platform is entirely covered, but is open on the storage yard side so that the yard crane can serve it. A magnet handles pig iron and scrap to the platform. On the side of the charging platform toward the storage yard are three rows of steel bins for pig iron and scrap and on the opposite side are four bins, three for coke (capacity, four carloads) and one for limestone. Coke is forked from railroad cars into self-dumping buckets handled by the crane. Coke breeze as it accumulates in the bins on the charging floor passes through chutes to trucks outside the building on the ground floor level. A monorail carries the coke from the bins to the cupola.

Cupola charges are made on 2-ton Whiting charging cars, each charge being weighed on Toledo automatic platform scales. The cupolas are charged by hand from doors on each side, but the cupola house is so designed that mechanical charging machines can be installed.

Storage room for fire clay, cupola blocks and alloys is provided under the cupola charging platform. Two oil-fired ladle-drying ovens, 8 ft. long and 4 ft. wide inside, are located in this room. A monorail for handling the ladles extends from near the front of the cupolas to these ovens. The charging floor is served by a 2-ton electric elevator for handling brick, sand and other supplies.

There are three Whiting cupolas of the continuous type, with shells 72 in. in diameter lined down to 42 in. These have a melting capacity in excess of 6 tons per

CORE Sand Mixing Department, Located Under One End of Sand Storage Building, the Sand Feeding into the Machine Hoppers from Small Bins Above. Core sand is not handled by hand from railroad car to the core makers' benches. Two men operate the core sand mixing department, one for each machine

hour each. However, the inner lining can be taken out and the diameter increased to 54 in. if foundry operations should require a greater melting capacity. Blast for the cupolas is supplied by three Connersville blowers located on the mezzanine floor

Sand Storage and Mixing

Sand is stored under cover in a sand storage building 60 ft. x 180 ft. In this are a series of concrete bins having capacities of 20 and 40 carloads, holding 10,000 tons of sand, or a six-months' supply. The bins are 27 ft. deep, their bottoms extending 7 ft. below ground level. Sand, brought in on a railroad track under a roof at one end of the building, is handled with a 5-ton Cleveland electric traveling crane equipped with a 1¼-yd. bucket that serves the entire sand storage building.

Incoming sand is either unloaded directly from the cars to the bins with the grab bucket or is discharged from the cars into pits beneath the track. If dropped into the pits, the cars can be immediately released and the sand conveyed to the storage bins when the use of the crane is not required for serving the mixing equipment. This arrangement prevents interruption in unloading, reduces labor of trimming cars and eliminates demurrage charges.

New sand for the molding floors is delivered by the overhead crane into bins over a driveway between the storage bins and unloading track. From these bins a Clark gasoline tractor carries it to the various foundry floors, where it is prepared in a riddle before being placed in the sand handling system.

At either end of the sand storage building are separate sand-mixing departments, one for core sand and the other for facing sand. Above each mixing department are concrete hoppers of 10-ton capacity, the tops on a level with the large storage bins, from which they are filled each day with the grab bucket. There are two core-sand mixing machines supplied by the Standard Sand & Machine Co., each with a capacity of 15 tons per hr. and each served by four hoppers. Under each hopper a pneumatically operated measuring gate delivers the sand into the machine, permitting mixing the core sand in various proportions. Each gate has a capacity of 2 cu. ft., but can be arranged for holding a smaller amount of sand. As twelve different mixes are required for the combined foundries, batch mixing is necessary. All the work in the mixing department is done by two men, one for each machine.

Core oil is stored in two 12,000-gal. tanks located outside underground, these being filled directly from tank cars. From these tanks the oil is pumped to two 250-gal. tanks above the mixers and then delivered by gravity to the mixer through a sight feed.

As each batch is finished the mixer discharge gate is opened and the sand passes through a hopper to a screw conveyor under the floor and is elevated to one of two receiving hoppers at the end of the core room adjoining. A double bucket, bottom dump, electrically operated monorail conveyor delivers the sand from the hoppers to a series of twelve small bins, one for each mix. From these bins a similar conveyor, on a lower level, delivers the sand to the core makers' benches through hoppers that extend from the gallery under the monorail. Each core bench has a separate hopper, to take care of work requiring different grades of sand. With this arrangement flexibility is provided to meet the wide variation in classes of work. The only labor required for handling the sand, from the time it arrives on the cars until it is delivered to the core benches, excepting the two mixer operators, is done by two men, one operating the crane in the sand storage building and the other dividing his time between the two monorail handling systems in the core room.

Facing sand for the iron foundry, discharged from the bottom of the storage hoppers in the same way as the core sand, is delivered through a pneumatically controlled gate onto a belt conveyor which carries it to a Simpson mixer. Sea coal is added by an automatic mixing device that feeds into the mixer. From the mixer the sand is dumped into an elevator which carries it to a rotary riddle, from which it is dumped to a Sellers centrifugal mixer in which it is aerated. From this mixer it passes to a conveyor which discharges it into either of two storage bins, one for each of the two kinds of facing sand used. From the bins a gasoline tractor carries the sand to the iron foundry.

Core Making and Finishing

The central location of the core building, with the foundries arranged on the three sides, reduces to a minimum the distance cores have to be carried. The core department occupies a space 122 x 260 ft., the core-making department on one side, the finishing department on the opposite side, and the core-baking department near the center. Cores for the iron foundry are made on one side and cores for the brass and aluminum foundries on the opposite side. Cores are made on International and Pridmore standard core machines and the lighter cores on Swan-Woodison roll-over machines. Each core maker places his finished work on portable steel racks, which are placed in the ovens by electric lift trucks. An exception to this practice is in the light miscellaneous cores, which are carried by hand directly from the benches to drawer-type ovens.

There are 28 oil-fired car type core ovens with lift doors, arranged in five batteries. Four of the rows of ovens are arranged back to back and there is one single line, making three passageways between ovens and insuring the movement of trucks without congestion. Each oven, 13 ft. long, 6 ft. wide and 6 ft. 6 in. high, accommodates two racks. They were supplied by the Cleveland Foundry Equipment Co. and are equipped with indicating pyrometers. In addition, there are two drawer-type ovens.

The core oven room is inclosed, being surrounded by a brick wall 6 ft. 6 in. high, above which asbestos sheet partitions extend to the roof line. Fuel oil that supplies the ovens as well as the aluminum and brass foundries is fed from three 20,000-gal. tanks underground, through tunnels by pumps adjacent to the supply tanks. The oil is pre-heated and is metered to each department. Low-pressure air for the core oven burners is furnished by two separate units of direct-connected centrifugal compressors of the Spencer type, so arranged that either unit can be operated individually or both together. Provision is made for the auxiliary use of gas in connection with the ovens. The oil burners, blower units and control for the burners are located below the core room floor in a tunnel having connection to the outside atmosphere. Ventilating grates that connect with the tunnel are located in front of each oven door, producing a circulation of air that carries the fumes upward when the doors are open. To insure satisfactory ventilation in the core-baking department, louvers have been provided in the side walls near the floor to permit infiltration of air as required.

After being baked, the cores are taken into the finishing room for cleaning, grinding, assembling and other operations. Five special machines designed in the plant grind jacket cores for cylinders, crankcase and transmission cores, these being cores that have flat surfaces. The cores, made with an extra amount of stock, are ground down to exact thickness to provide a smooth surface at the joint. Horizontal emery wheels are used for the grinding, 12-in. wheels for the cylinder cores and 18-in. for the crankcase cores. The core is kept in position on a jig and the grinding is done with speed and accuracy. White core wash is used for the most part for coating cores, although some of the smaller cores are coated with graphite.

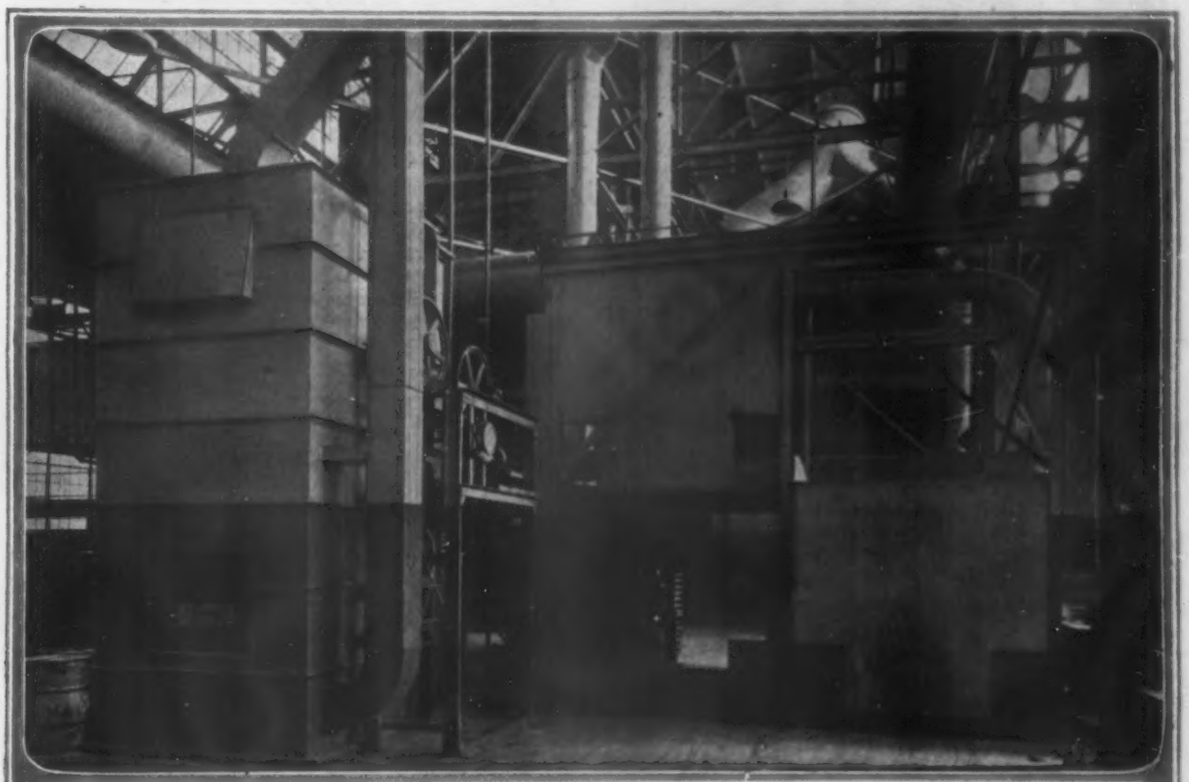
After the cores are cleaned, pasted and dipped in the core wash, they are placed in continuous vertical gas-fired ovens. They make one round trip in these ovens, requiring about 15 min., and are dried at a temperature of about 250 deg. Fahr. These ovens, five in number, were built by the Detroit Sheet Metal Works. There are also two ovens with doors at each end for drying the cylinder cores after dipping, pasting and assembling. These cores, placed on trucks, 24 to a truck, each oven holding two trucks, are kept in the ovens 2½ hr. at a temperature of 300 deg. Fahr. The racks of finished cores are delivered to the foundries by means of lift trucks, the racks being used for storing cores until used. Quite a few girls are employed

in the core department in making light cores and cleaning cores.

A wire-forming and straightening department is located in an annex to the core-making department. Due to the continuous production of duplicate cores, it has been found advisable to cut and form the wires on automatic machines. This department is provided with equipment both for forming the reinforcements and for straightening wires returned from the foundries.

Iron Foundry

The iron foundry building is 142 ft. x 320 ft., the molding floors occupying 220 ft. of the length. The building is divided lengthways into a 60-ft. center aisle and two 40-ft. side aisles, the cupola room being located at the center of one side aisle. At the front or east end of the building is the iron foundry cleaning room, 80 x 142 ft., and between that and the foundry



ONE of the Vertical Continuous Ovens, at the Left, for Drying Cores. At the right are two truck type ovens, one shown with the door open, for drying cylinder cores. The ovens are heated by means of fuel oil, but gas is supplied as an auxiliary fuel. Burners, blowers and control are located beneath the floor

floors a knock-out room occupies one 20-ft. bay extending across the building.

This is a continuous foundry designed for day operation only. The heavier work, including the making of cylinder molds, is done at the east end of the foundry and the lighter work at the west end. Two grades of molding sand are used, a coarse sand for the cylinder molds and for some of the other large molds and a fine sand for the lighter work. This necessitates two complete sand mixing and distributing systems, an unusual feature in a plant handling sand mechanically.

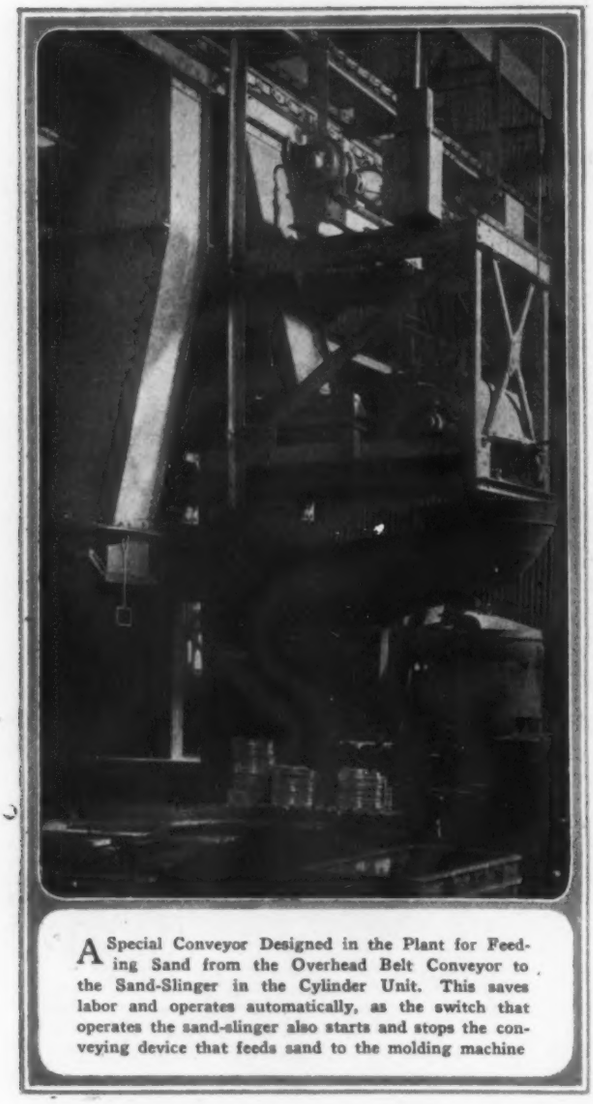
Four grades of iron are used: One, containing 1½ to 2 per cent of nickel, is used for cylinder castings. Another is a hard iron about the same as the cylinder iron but containing no nickel, from which sprockets, exhaust pipes and some other parts are made. A third is a soft iron for water pumps, brackets and some other parts not subjected to wear, and the fourth, a special iron for pistons, contains 1 to 1½ per cent nickel. The nickel is added to the iron in the pouring ladle.

Cylinder blocks are molded and poured in a 60 x 60 ft. section of the center aisle. The cheek, cope and drag of the cylinder mold are made for the most part on a Beardsley & Piper Co. sand slinger and it is the intention to use this type of machine exclusively for this work, although at present some of the molds are made on jolt machines.

A special conveying device designed in the plant is provided for feeding sand to the sand slinger from the belt conveyor that supplies the unit. The sand passes from the distributing belt to a hopper, from which it feeds as fast as wanted to a cross conveyor about 7 ft. long that discharges the sand into the hopper of the sand slinger. The feeding device, motor-driven, is controlled by the same switch that controls the molding machine, so that it feeds sand into the machine hopper when the machine is operating, while the supply is cut off when the machine is stopped after finishing the mold. This is found to be a very convenient and economical method.

Cylinder molds are placed on a roller conveyor at the side of the unit and, after assembling, are pushed to the end of this conveyor and to a transverse roller conveyor, from which six lines of roller conveyors extend through the pouring side of the unit and on which the molds are poured. Turntables provided on the transverse conveyor, at the points at which it connects with the conveyors that extend into the pouring bay, make it easy for a workman to slide a mold from any conveyor line to the transverse line. Three pouring aisles are provided between pairs of the six rows of conveyors on the pouring floor. Matthews roller conveyors are used in this unit and in various other foundry floors.

Metal is handled from the cupola with two 2-ton Sprague hot metal carriers electrically operated on a monorail. While this system of pouring has been adopted recently in a few other foundries, it has here a new feature in that, instead of pouring the metal from the monorail track of the carrier, greater flexibility is provided by transferring the carrier from its own track to an electric traveling crane. The carrier, on reaching the pouring floor, runs from its monorail



A Special Conveyor Designed in the Plant for Feeding Sand from the Overhead Belt Conveyor to the Sand-Slinger in the Cylinder Unit. This saves labor and operates automatically, as the switch that operates the sand-slinger also starts and stops the conveying device that feeds sand to the molding machine

onto the connecting rail of a 6-ton crane with a 15-ft. span that serves the pouring floor. This crane, built by the Ricker Mfg. Co., provides both a lengthways and crossways movement for the metal carrier over the pouring floor.

About 800 lb. of metal is poured into the ladle, although it has 1600 lb. capacity. Pouring is done direct from the ladle and only two men are required for pouring, one in the carrier cab and another for skimming the metal. The metal conveyor has an electrically operated lifting device, permitting the ladle, which is at its low position when being filled, to be raised 3 ft. 4 in. when pouring the molds. A duplicate metal conveyor that operates only on its own monorail track serves the remainder of the iron foundry. The metal for the small work is poured from the large conveyor ladle into hand or small bull ladles.

About 85 cylinder molds are made in the morning before pouring begins, pouring starting at about 10.30 a. m. This gives the molders a good start. It is expected that an output slightly in excess of 300 cylinder castings per day can be attained in this unit.

Cylinder molds are shaken out over grates at the end of the pouring bay and the flasks go to the adjoining knock-out bay, partly partitioned from the molding floors, where they are knocked out over a grating onto a belt conveyor beneath. A magnetic pulley collects the nails and other metal, while the refuse —burnt sand and cores—is carried underground to the outer side of the raw material storage yard and elevated into an 80-ton hopper, from which it is dumped into a car on the track that serves the storage yard.

A space 40 x 65 ft., at the east end of the north aisle, is used for small miscellaneous work. The foundry, outside of parts occupied by the cylinder and jobbing units, is divided into four foundry floors. The center aisle is divided at the center into two molding floors with two parallel rows of molding machines, one row belonging to each floor and with one sand distributing system serving both floors. The two other floors are located in the outer aisles. Between the center and outside aisles are two main gangways and along each side aisle at the side of the gangway is a shake-out grating with a belt conveyor beneath. In these four molding units roller conveyors extend across the floors from the machines to the shake-out grating. The copes and drags are assembled on the conveyor. The molds are pushed along the conveyor toward the gangway, are poured on the conveyor and then the molds are pushed from the end of the conveyor onto the shake-out grating. These foundry floors are served by hand-operated hoists. Hand roll-over types of International and Pridmore molding machines are largely used. Cylinder head molds are made on stripping plate machines, while pistons, which are made in green sand, are molded on Arcade machines.

(*To be concluded*)

Merger of Jobbing Houses Abandoned

The merger of steel jobbing houses in New England and New York has been abandoned. The companies interested in the plan were the National Bridge Works, Long Island City; Froment & Co. and Ogden & Wallace, New York; the Brown Wales Co. and the Arthur C. Harvey Co., Boston; Charles C. Lewis Co., Springfield, Mass.; George F. Blake, Jr., & Co. and Pratt & Inman, Worcester; Congdon & Carpenter, Providence, and the New England Drawn Steel Co., Mansfield, Mass. The chief obstacle in establishing the combination appears to have been the difficulty of making acceptable payments to the estates having ownership in some of the participating companies.

Decision as to the location of its new seamless tube mill, recently authorized by directors of the Youngstown Sheet & Tube Co., is still being withheld. The choice is between East Youngstown and Indiana Harbor, Ind. A number of civic bodies at Youngstown have requested that, other considerations being equal, the new unit be placed in the Youngstown district. The company is proceeding with installation of a new continuous skelp and bar mill at the Indiana Harbor works.

SAND Is Stored in Concrete Bins Having a Capacity of 10,000 Tons, or a Six Months' Supply. From the receiving tracks entering right end of sand storage building, in center of photograph, sand is delivered to the bins by grab bucket on a traveling crane. One end of foundry appears beyond sand storage, while a manufacturing building is in background, behind the tank cars

German Industries at Higher Speed

Recent Observations of an American Engineer—Manufacturers Want Long-Time Loans—The Dawes Plan and Germany's Expanding Exports

BY STERLING H. BUNNELL*

IN the short time since German finance was put in order and operations begun under the Dawes plan marked changes have taken place in the industrial outlook there. Factories which a year ago were working only two or three days per week are now on full time. There is no great degree of unemployment, in which respect Germany is very much better off than Great Britain. Wages and living costs are not intolerably different as compared with pre-war conditions. Conversations with men of affairs reflect a feeling of hopefulness, entirely lacking a year ago. German factory products are being offered in world markets at reasonable prices, no longer distorted fantastically by ever decreasing wages and increasing cost of material. The question of successful competition by German manufacturers in export trade is accordingly coming up in many forms.

Low Bids on British Ships

One striking instance is the placing of an order about a month ago by a British firm of ship owners with a German shipyard for the building of five motor ships. The German price was about $285,000 per vessel below the lowest British quotation. The shipping company offered a premium of $50,000 above the German price to any British shipyard that would take the order; but none could afford the loss which the work would have entailed. In this case the successful German bidder quoted much under the prices of other German yards, but any of these would have done the work for much less than the lowest British tender.

The difference in prices in this instance is unusual, and does not mean that a proportionate difference exists throughout between all English and German prices. What is indicated is that German industry is favored with reasonable wages and working hours and use of labor-saving equipment. The loss of coal mines to other nations and the increased cost of getting coal from the German mines exhausted during the war have been met by the development of lignite areas, the general use of lignite and lignite briquettes, increasing use of gas in industry, and construction of large central stations near lignite mines, so that power may be cheaply generated for distribution. In shipping service, Germany has a large proportion of the 110 per cent of motor ships reported to be building as compared with steamships. The ships lost to the Allies have been replaced by new ones with the latest economies and facilities, built at small labor cost during the period of depreciating money. The belief in automatic German supremacy seems to have been replaced by general willingness to do what is necessary and to spare no effort to overcome the handicaps resulting from the conditions which followed the war.

Financial Handicaps Removed

It is only to be expected that relief from intolerable conditions may release energies which will tend to rapid recovery of lost ground. The German industrial workers have lived through a terrific ordeal. The financial chaos brought about by the collapse of the mark, through the entire range from gold par down to the point where a trillion paper marks had only 24c. gold value, seems now like a nightmare, something to be forgotten as soon as possible. The period of chaos ended in October, 1923, with the issue of the rentenmark, a fiat note with an arbitrary face value of 4.2 to the American dollar. Although at no time was there any certainty that it would hold its purchasing power, the rentenmark continued to circulate at par and prices held steady. Along with the rentenmark currency circulated the old trillion-mark notes with a value arbitrarily fixed at one rentenmark and as the small-change minimum, the fifty-billion mark notes, equal to 5 pfennings gold value or 1.2 cents. But the financial outlook was too uncertain to encourage accumulation of rentenmark bank balances, so ordinary commercial credits disappeared. Accordingly, the working time of a factory was limited by the amount of currency which the local bank could supply each week to pay wages. Some plants, therefore, although with output sold for many months in advance, could operate only two or three days per week, pay their men for one or two days' work, and after the money had been spent and returned by the local shops to the bank, make up the balance of the payroll. Credits for the purchase of materials could not be had from local banks, because there were not enough funds on deposit on which to base them. Such funds as were unavoidably required were borrowed from abroad at tremendous interest rates, often 3 per cent per month. The effect of these conditions was restriction of output and excessive increase of production cost.

Rapid Industrial Revival

The stabilization of finances by the adoption of the Dawes plan permitted the making of loans to German industries with an acceptable degree of safety. The revival of industry has been rapid. With currency enough to make up the full week's payroll, the shops went to full time production. Money came into the channels of trade from foreign credits and from Government purchases and payrolls. The effect has been a marked reduction in interest rates, and an increase in the price of bonds and mortgages bearing a fixed rate of interest. At present there is plenty of short-time money offering, with naturally great relief to the money market.

Most of this relief comes, however, from the offering of commercial paper which must be liquidated in a short period, and therefore cannot be used to carry the cost of plant or of operating improvements. In fact, the very ease of the money market may prove a danger to the sound development of German industry, by encouraging too rapid expansion rather than the building for future success by reduction of cost of product. There is a total lack of the former steady stream of savings from the people for permanent investment. Having experienced the melting away of all their reserves, accumulated by years of self-denial, the German people may be a long time in giving up the present habit of instant conversion of earnings into the desires of the moment. For the time being the habit of saving has been lost.

Industry Wants Long Time Loans

There is accordingly an urgent demand in Germany for long-term loans which can be used for improved equipment and methods. Everywhere engineers and managers inquire for information of the latest labor-saving devices. If it is suggested that labor is cheap in Germany and therefore improved equipment is unnecessary, the reply is that every possible saving is required if Germany is to compete successfully with the world. The largest concerns have

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been able to obtain credits for improvements from foreign sources, particularly from the United States, but the smaller firms, needing less than the usual Wall Street minimum of "a million," are unable to participate in the credits offering and must postpone improvements and operate at a disadvantage.

As for the short-term credits that are available, these ought to be utilized to bring in raw and partly-finished material to be manufactured and exported, but the actual imports from Germany have increased much more in the classes of food and luxuries than materials for manufacture. This may be only a temporary change, due to the excessive cost and difficulty of importing during several years past. Interest rates are still very high, and it is curious to observe that plenty of American money is available to German banks at 6 per cent, which the banks in turn lend their customers at 8, 10 or 12 per cent—very profitable for the German bankers. Several American accounting firms, established and well known in New York, have opened branches in Berlin, so that financial reports from accepted authorities are now available to guide the direct loaning of American funds to German firms, and thus the lender can obtain the full benefit of the high interest rate instead of giving half to the intermediary bank.

Employee Relations Favorable

The relations between employers and workers in Germany seem to be excellent. During the period of financial chaos it was impossible for the employer to shut down his plant and so relieve himself of the responsibility of finding the ever-increasing sums needed for the payroll. Unless money could be kept in circulation through the hands of the workmen, starvation would bring revolution and universal ruin. So the employers continued to run in the squirrel-cage, soliciting orders, collecting, paying out, and always following the needs of their workers and doing the utmost to make their condition tolerable. The workers seem to have appreciated the situation and to have evinced marvelous patience throughout the years of stress. Today they are receiving daily wages about 20 per cent higher than before the war, and are working nine hours instead of ten. Living costs are about 35 per cent higher, and rents nearly the same as formerly. The employers admit that wages will have to be raised to some extent, and the workers seem to be willing to wait a reasonable time until improved conditions permit the change to be made.

Absorbing Germany's Exports

The outstanding feature of the whole situation is that in order to pay reparations to the Allies, Germany must export goods and services. The Dawes plan recognized that internal taxation in marks is one thing, and the payment of reparations in pounds, francs, lire and lei is quite another. The money raised for the purpose is, therefore, to be deposited in a bank to the credit of the accounts of the several Allies, but can be paid out only as the condition of the mark exchange may permit. That is to say, the Allies must take German goods, or must take goods from other countries, which in turn will accept German goods as imports. Services such as transportation by ships can, of course, be substituted for goods. The British Government has recognized the necessity of facilitating reparations payments by arranging to take the German credits and place these at the disposal of British importers of German goods, to be used directly in payment.

The interest of Germany is in exporting as much of her product as may be possible. The interest of each of the Allies is on the contrary divided and double; on the one hand to prevent competition from Germany in export trade, and on the other to facilitate German export trade so as to produce a favorable trade balance for Germany with which to pay reparations.

All the difficulties of the German manufacturers were not by any means removed by the Dawes plan. It did put them in position to resume operations and give them incentives to increase output and reduce cost. These incentives will perhaps cause the remodeling of German factory methods so as to resemble more closely those generally known throughout the world as "American."

SHOENBERGER PLANT PASSES

American Steel & Wire Co., Pittsburgh Unit Over a Century Old

Work has been begun of dismantling the old Shoenberger Works, American Steel & Wire Co., Pittsburgh, the news of the abondonment of which was published in THE IRON AGE, Feb. 5, 1925. The horseshoe department of this plant, which was the only one of the works that had been operated in the past year, shut down on March 28, and the Phoenix Horseshoe Co., Chicago, which, as announced early in February, had purchased the horseshoe business of the American Steel & Wire Co., now is moving the equipment to its plants at Cleves, Ohio; Joliet, Ill., and Schenectady, N. Y. Usable equipment in the other departments of the plant will be moved to other plants of the American Steel & Wire Co. in the Pittsburgh district and in Cleveland. The remainder will be scrapped. There is no official word on the matter, but the common belief in Pittsburgh is that the site of the plant has been sold to the Pennsylvania Railroad, the Pittsburgh terminal of which is badly cramped and as badly in need of enlargement.

Although the plant was more than 100 years old, it had been kept reasonably well up to date and on the score of producing costs its continuance might have been justified if there had been enough land to permit expansion. There was not only that obstacle, but the land now is too valuable for a steel plant site and being located within the corporate limits of the city of Pittsburgh the property is subject to a very high rate of taxation in comparison with points outside the city. It was this last consideration that weighed most heavily in the decision of the company to abandon the plant.

Two blast furnaces are lost to the Pittsburgh district by the dismantling of this plant. These furnaces had a rated capacity of 164,000 tons annually. The steel works, capable of producing 414,000 tons of ingots annually, comprised two 7-ton Bessemer converters; three 35-ton basic open-hearth furnaces; two 150-ton mixers; three cupolas; three 5-hole and one 4-hole soaking pits, with eight gas producers. Rolling equipment comprised 36-in. and a 32-in. 2-high 1-stand blooming mills; a 16-in., 2-high, 6-stand continuous billet mill; a 16-in. 2-high, 2-stand; a 9-in. 3-high, 1-stand; a 9-in. 2-high, 3-stand; an 8-in. 3-high, 2-stand and an 8-in. 2-high, 2-stand bar mills and a 34-in. x 127-in. 3-high sheared plate mill. The latter, after being idle for many years, was put into operation during the World War. It was rated as capable of producing 72,000 tons a year. In recent years the plant has been used chiefly in the production of bars for horseshoes and toe calks. Steel over and above these requirements has been shipped in semi-finished form to other units of the American Steel & Wire Co. or other Steel Corporation subsidiaries.

The Chicago branch of the National Metal Trades Association held its annual meeting Tuesday evening, March 31, at the Midday Club, Chicago. Officers for the coming year were elected as follows: President, Charles H. Strawbridge, Goodman Mfg. Co.; vice-president, Charles E. Finkl, A. Finkl & Sons Co.; treasurer, Arthur E. Blackwood, Sullivan Machinery Co.; secretary, Charles L. Blatchford. The meeting was addressed by O. E. Bradfute, president of the American Farm Bureau Federation, Chicago, and C. F. Anderson, president of the Associated Industries of Massachusetts and general counsel Norton Co., Worcester, Mass.

Combustibility of Blast Furnace Coke*

Further Experiments Based on the Composition of Gases —Size of Coke and Rate of Air Supply—Beehive Coke and Charcoal

BY RALPH A. SHERMAN†

MANY articles have appeared in the technical journals of the United States, England and Europe during the past two years on the subject of coke combustibility, discussing the methods for the determination of combustibility, the relation of the properties of coke to combustibility and the relation of combustibility to blast furnace operation. The Bureau of Mines has taken an active interest in this problem and has attacked it along several different lines.

Perrott and Kinney[1] have studied the combustibility of coke under actual blast furnace conditions by sampling the gases across the hearth in a number of furnaces and thus determining the rate of progress of combustion at the tuyeres. They found that the rate of disappearance of O_2 and CO_2 was essentially the same in 11 furnaces studied, the furnaces operating on widely different varieties of coke. Similar work in which samples of the gases and stock are being taken across several planes above the hearth has been in progress for some time and the results will be published in the near future.

Sherman and Blizard[2] studied the combustibilities of various cokes by determining the rate of progress of combustion of these cokes in pieces of from 1 to 1½ in. in size when burned in an experimental furnace of 1 sq. ft. grate area in fuel beds 12 in. deep. The detailed description of the apparatus and methods used in these experiments, together with a discussion of the advantages of this method over certain other methods, has been given in their report and reports of subsequent investigations along the same line.

Résumé of Previous Work

The investigations reported to the present time have shown:

1. That the rate of combustion had very little effect on the final products of combustion.

2. That the relative combustibilities differed in different parts of the fuel bed.

3. That the calculated mean combustibilities of the four by-product cokes studied ranged from 73 to 77 per cent of the maximum attainable combustibility. The method of calculation of the combustibility of the coke is based on the fact that a gas containing particular volumes of CO_2, O_2 and CO, will contain on complete reduction an additional volume of CO equal to twice the CO_2 and O_2 content of the original gas. Therefore the expression

$$\frac{CO_2+CO}{2(CO_2+O_2)+CO}$$

represents the ratio of the carbon actually present in the sample of gas to the maximum that could be obtained and

$$\frac{CO_2+CO}{2(CO_2+O_2)+CO}\times 100$$

gives values, in per cent, for the mean combustibility between the point of air admission and the point of sampling.

4. That of the various physical or chemical properties of the by-product or petroleum cokes, that of size alone had any apparent relation to combustibility. A coke which gave a mean combustibility of 73 per cent for a 12-in. fuel bed, when the pieces were of a size from 1 in. to 1½ in., gave a mean combustibility of 85 per cent when crushed to a size of from ⅛ to ½ in.[3]

5. That pitch coke did show a material difference in the shape of the curves showing the change in gas composition in the fuel bed, and the mean combustibility over the entire fuel bed was 59 per cent.[4]

Scope of Present Investigation

Inasmuch as the investigation to the present time had covered only four blast furnace cokes, all of which were by-product cokes, it was considered advisable to extend the investigation to include other fuels, particularly beehive cokes and wood charcoal. Therefore this paper presents the results of tests on the following fuels:

1. Jones & Laughlin coke, Koppers oven, 80 per cent Pittsburgh coal, 20 per cent Pocahontas. This coke was from the oven walls.

2. Continental No. 1, beehive coke. Frick Coal & Coke Co.

3. Leisenring No. 1, beehive coke. Frick Coal & Coke Co.

4. Wilkenson beehive coke. Wilkenson Coal & Coke Co., Wilkenson, Wash.

5. Wood charcoal. Bon Air Coal & Iron Corporation, Nashville, Tenn.

The experiments on these cokes were conducted under the same conditions as those previously reported, that is, the size of the pieces of coke was from 1 to 1½ in., the same furnace was used with a fuel bed 12 in. deep, and the rate of air supply was maintained at 150 lb. per hr., giving a rate of combustion of from

*Published by permission of the Director, Bureau of Mines, Department of the Interior. It is intended to supplement the data published in THE IRON AGE, June 28, 1923, "Combustibility of Blast Furnace Coke."

†Assistant Physicist, Pittsburgh Experiment Station, U. S. Bureau of Mines.

[1] Perrott, G. St. J., and Kinney, S. P., "Combustion of Coke in the Blast Furnace Hearth," *Trans.* Amer. Inst. Min. and Met. Eng., vol. 69, 1923, p. 526.

[2] Sherman, R. A., and Blizard, John, "Combustion of Blast Furnace Cokes in Fuel Beds," *Trans.* Amer. Inst. Min. and Met. Eng., vol. 69, 1923, pp. 526-542, 585-86.

[3] Sherman, R. A., and Kinney, S. P., "Combustibility of Blast Furnace Coke," THE IRON AGE, June 28, 1923, pp. 1839-1844.

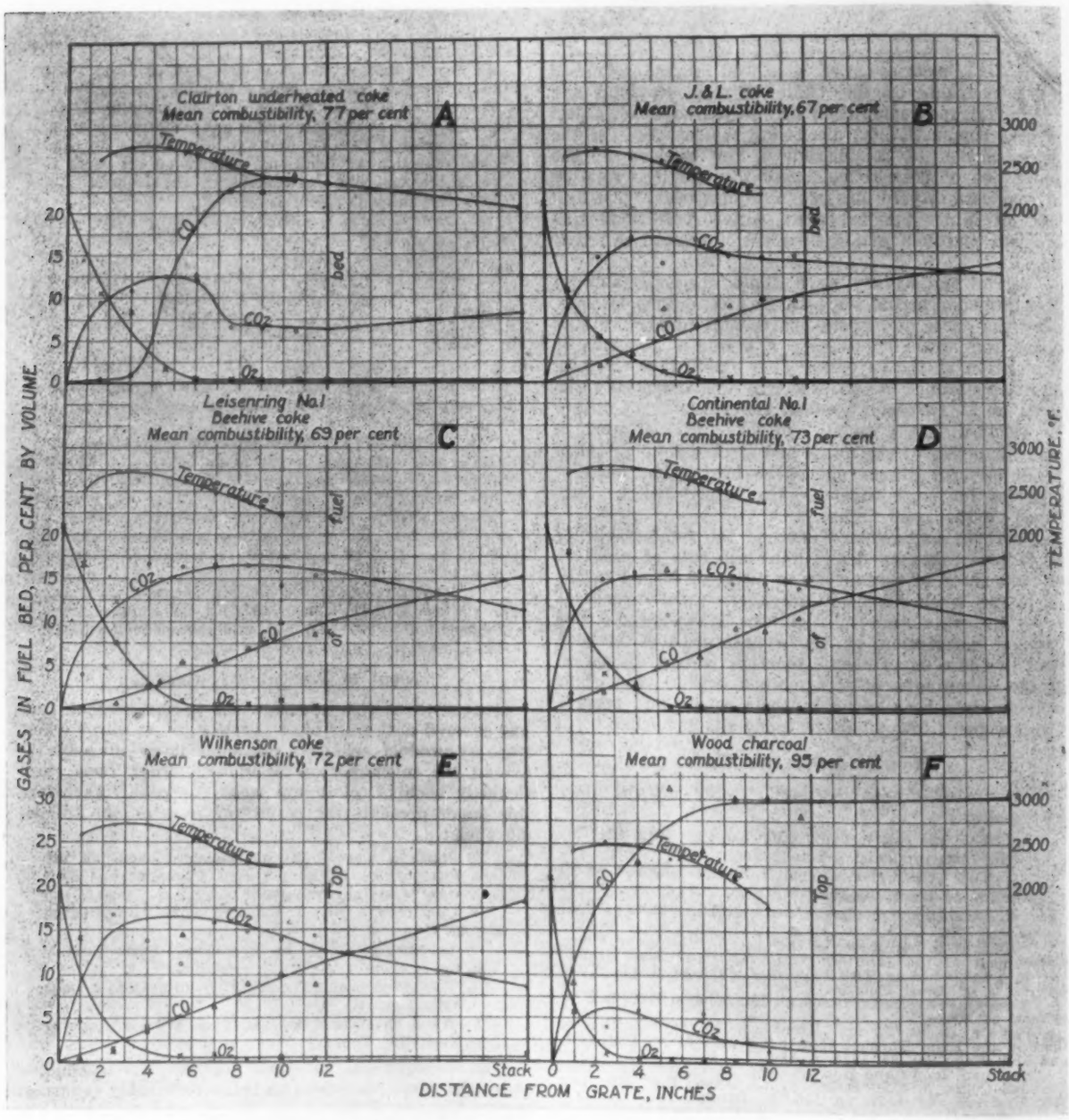
[4] Perrott, G. St. J., and Sherman, R. A., "Reactivity of Coke in Relation to Blast Furnace Operation," *Proc.* Eng. Soc. of W. Pa., vol. 39, 1923, p. 351.

Table I—Analyses and Physical Properties of Coke

Coke	Coke Analysis: Moisture, Per Cent	Volatile Matter, Per Cent	Fixed Carbon, Per Cent	Ash, Per Cent	Hydrogen, Per Cent	Carbon, Per Cent	Nitrogen, Per Cent	Oxygen, Per Cent	Sulphur, Per Cent	Calorific Value, B.t.u. per Lb.	Porosity, Per Cent by Volume of Cell Space	Weight per Cu. Ft., Lb.
1	2	3	4	5	6	7	8	9	10	11	12	13
Jones & Laughlin..	0.2	1.5	85.9	12.4	0.6	84.9	1.0	0.2	0.9	12,400	48.2	31
Continental No. 1..	0.1	0.9	88.1	10.9	0.7	86.3	1.3	0.0	0.8	12,810	50.3	29
Leisenring No. 1..	0.1	0.5	88.0	11.4	0.4	85.9	1.1	0.4	0.8	12,510	46.5	30.5
Wilkenson	0.2	0.5	80.3	19.0	0.4	78.9	1.4	0.0	0.5	11,690	54.1	27
Wood charcoal ...	3.2	20.0	72.8	4.0	3.7	73.7	0.4	18.1	0.1	12,920	62.2	17

20 to 25 lb. of fuel per hour, this rate of combustion resulting in temperatures of from 2500 to 2700 deg. Fahr. and avoiding the mechanical difficulties of clinkering which would take place with higher rates of combustion. A water-cooled hood was placed on top of the furnace in order to secure a representative sample of the gases leaving the fuel bed.

Therefore, to obtain an exact average of the gas composition in any plane, it would theoretically be necessary to determine the composition of an infinite number of samples. Furthermore, the introduction of the gas samplers causes a certain amount of channelling and, since the samplers were but 1½ in. apart in the vertical direction and some of the pieces of coke were



Combustibility Curves for the Various Fuels

The analyses of the fuels, together with their physical properties, are given in Table I.

Presentation of Results

The composition of the gases and the temperatures in the fuel bed for the various fuels are shown graphically in the illustration. The points indicate the averages of from three to six analyses at each position. The points for CO_2 are indicated by circles, for O_2 by crosses, and for CO by triangles. The smooth curves drawn through the points are only approximate curves, that is, they were not determined mathematically.

Since the resistance to the flow of gases is not uniform across the fuel bed, the gases will have varying composition at various points in any horizontal plane. of this size, the successive samplers were by no means in the same stream of gas. Therefore it would not be surprising if the variation in the composition of the samples from point to point were more erratic than shown. It is of interest to note that for some reason, as yet undetermined, but probably mechanical, the CO content of the gases was in several instances very high at about 6 in. from the grate. This is an example of the mechanical difficulties encountered in an investigation of this kind.

Section A of the illustration shows the curves for a Clairton by-product coke, which is a typical curve of the four by-product cokes previously reported.

Section B shows the curves for the Jones & Laughlin coke taken from the walls of a Koppers oven. The

curves are quite different for the two cokes. The rate of disappearance of O_2 does not differ greatly, but the CO_2 reaches a maximum of 17 per cent for this coke, compared with a maximum of but 12.5 per cent for the Clairton coke. The rate of increase of the CO to a maximum of 14 per cent for the Jones & Laughlin coke is very gradual, as compared to the rapid increase above 4 in. from the grate to a maximum of about 24 per cent for the Clairton coke.

Sections C and D show the curves for the two samples of Pittsburgh beehive cokes. They do not differ greatly one from the other nor from the Jones & Laughlin coke in the general appearance of the curves. The mean combustibility of the Continental coke is 73 per cent, compared with 69 per cent for the Leisenring coke and 67 per cent for the Jones & Laughlin coke.

Section E of the illustration shows the curves for the Wilkenson coke. This coke gives a mean combustibility of 72 per cent over the entire fuel bed. The curves for the wood charcoal are shown in Section F. The notable features of these curves are the low maximum CO_2 content and the rapid increase of the CO content to a maximum of approximately 30 per cent. There remains but 1 per cent of CO_2 unreduced at the top of the fuel bed. The mean combustibility is 95 per cent.

With the exception of the wood charcoal there is no evident relation between the extent of the endothermic reaction of CO_2 reduction and the observed fuel bed temperature.

The three beehive cokes and the Jones & Laughlin oven-wall cokes show a generally similar action in the reduction of O_2 and CO_2, but different from the four by-product cokes previously studied.

Two of these by-product cokes were re-run in order to learn whether or not some slight change in furnace lining might have affected the results, but the results checked essentially those previously obtained.

Many gas samples were taken during this investigation, particularly in the fuel bed. As a routine determination of combustibility, however, it would generally only be necessary to determine the average composition of the gases leaving the top of the fuel bed, since complete reduction of the CO_2 does not take place with this size of furnace. Thus many of the mechanical difficulties mentioned above would be avoided.

The fuel bed should be densely packed at the time the samples are taken, entirely incandescent, and of exactly the same depth.

The combustibilities determined when no samplers are inserted in the fuel bed would probably be different than found here, owing to the cooling effect of the samplers and to channelling.

Porosity and Combustibility

The various blast furnace fuels tested to the present time are arranged in Table II in order of their combustibility, calculated from the composition of the top gases, together with their porosity. There is no evident general relation between the porosity and combustibility.

Other things being equal, perhaps the combustibility would be greater, the greater the percentage of cell-space; but the state of the carbon, the ash content and other factors may mask the relation of the combustibility and the porosity.

Interpretation of Results

It is not the province of this paper to discuss the significance of these differences in the combustibility of these cokes from the standpoint of blast furnace or foundry operation. No operating data are available for these cokes, so that it cannot be stated just what effect a change from a coke of 77 per cent combustibility to one of 69 per cent would have on the operation of a blast furnace or a foundry cupola. It should be noted, however, that these cokes are being used in blast furnaces. It is also of interest that Perrott and Kinney[5], in their survey of the hearths of 11 furnaces, found very slight differences in the rate of disappearance of oxygen and carbon dioxide. Their survey included cokes which doubtless varied over as wide a range as those reported here.

It remains for blast furnace men to adopt tentatively some method of determination, use the method over some period, and thus the results of the combustibility tests and the results of operation could probably be correlated.

[5] Work cited.

Summary of Results

1. The method of determination of coke combustibility by the determination of the composition of the gases leaving a fuel bed of given thickness, of a given size of coke, and given rate of air supply, gives an accurate measure of the combustibility of the coke under those conditions. The combustibility can be calculated from the gas composition as a percentage of the maximum attainable combustibility.

2. The combustibility of the fuels studied during this investigation, as measured at the top of a 12-in. fuel bed, burning pieces of a size from 1 to 1½ in. with an air supply of 150 lb. per hr., ranged from 59 per cent for a pitch coke to 95 per cent for wood charcoal.

3. No attempt has been made to interpret the significance of these results as setting the allowable or desirable limits for blast furnace or foundry work. It is suggested that blast furnace and foundry men adopt a similar test, and attempt to correlate the results with their operating data.

Table II—Combustibility and Porosity of Blast Furnace Fuels

Type of Coke	Mean Combustibility, Per Cent	Porosity, Per Cent
Jones & Laughlin	67	48.2
Leisenring No. 1	69	46.5
Wilkenson	72	54.1
Continental No. 1	73	50.3
Benham	73	50.0
Clairton overheated	76	44.1
Clairton underheated	77	47.1
St. Louis	77	52.7
Wood charcoal	95	63.2

Acknowledgments

Acknowledgment is made of the helpful suggestions of A. C. Fieldner, supervising chemist, and H. W. Brooks, fuel engineer, of the Bureau of Mines; also to the companies that furnished the fuels used in the tests. The coke analyses were made in the coal laboratory of the Pittsburgh Experiment Station of the Bureau of Mines under the direction of H. M. Cooper, chemist; and the physical tests in the analytical laboratory under the direction of W. A. Selvig, assistant analytical chemist.

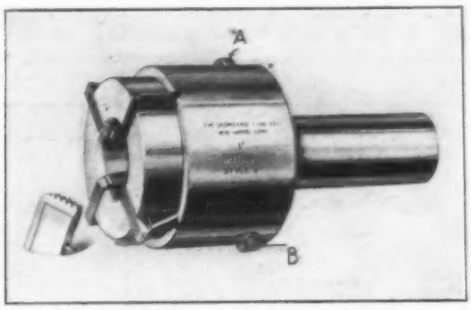
The University of Pittsburgh is broadcasting a series of radio education lectures on industrial developments from station KDKA, Pittsburgh. Dr. Stephen A. Goodale, professor of metallurgy of the School of Mines of the university, recently talked on the opportunities for scientific research in the steel industry. A pamphlet containing seven of these brief addresses has been compiled by William A. Hamor, assistant director Mellon Institute of Industrial Research, University of Pittsburgh.

The salmon pack from Alaska promises to be unusually heavy this summer, according to advices received recently by the Alaska department of the Seattle Chamber of Commerce. Very large purchases of supplies, such as fishing gear, tinware, foodstuffs and other goods, have been made in connection with the outfitting of the salmon fleet, which is now being overhauled and reconditioned in the shipyards at Seattle. It is estimated that about 20,000 men have recently left western Washington to work in Alaska during the salmon packing season.

Rotary Self-Opening Die-Head

A rotary self-opening die-head, known as type K, and having chasers that project beyond the front of the head, therefore permitting the tool to cut up to a shoulder without alteration, has been placed on the market by the Geometric Tool Co., New Haven. The chasers are supported without the necessity for a face-plate and may be removed and replaced quickly by loosening one screw.

The die-head is of small diameter and is intended for automatic screw machines and drilling machines. It is completely inclosed to exclude dirt and chips. The adjustment for diameters is conveniently located. All



The Tool Is of Small Diameter So That It Can Swing Freely In Limited Space

important parts are heat-treated and hardened to meet the required service, and all working surfaces, including the chasers, and chaser slots, are ground to close limits of accuracy. Operation is simple. To open the die-head, when the spindle is advanced, a stop provided on the machine contacts with the trip on the outside of the tool, when the desired length of thread has been cut. When the spindle is returned, the die-head is closed by having a yoke on the machine contact with the rear of the die-head closing sleeve. The device is available in 9/16, 1, 1¼, and 1½ in. sizes.

Jobbers' Associations Send Appeal to Manufacturers

The National Hardware Jobbers Association and the Southern Hardware Jobbers Association are appealing to manufacturers to send out bills of lading with their invoices. E. G. Kirtley, traffic manager, Montgomery & Crawford, Spartanburg, S. C., in discussing the matter, said:

A great many manufacturers, or shippers, send out their invoices unaccompanied by the bill of lading. This oversight causes no end of trouble and inconvenience to the receiver of the goods.

If the bill of lading is not sent with the invoice there is no evidence to show that the shipment has been delivered to the transportation company. When the bill of lading is signed by the agent of the transportation company the title to the goods passes to the consignee, and the shipper has no right to retain the bill of lading in his possession, as it is not his property.

Also, if the goods are sold on a delivered basis, or freight-allowed basis, and the invoice is unaccompanied by the bill of lading, the purchaser is put to a disadvantage, as there is no way to arrive at the correct amount of freight to be deducted, and if a deduction is made, it would have to be estimated and corrected at a later date with considerable trouble and additional clerical work.

Under the above circumstances the bill of lading should always accompany the invoice.

Now, if the goods are sold on a delivered basis and the freight is prepaid, granting that the bill of lading is the property of the shipper, how is the receiver of the goods to know that the freight has actually been prepaid if there is no bill of lading sent with the invoice as evidence?

At the eighth annual meeting of the National Slag Association, April 3 at the Hollenden Hotel, Cleveland, the following officers were elected for the coming year: President, C. L. McKenzie, Duquesne Slag Products Co., Pittsburgh; vice-president, C. E. Ireland, Birmingham Slag Co., Birmingham, Ala.; secretary-treasurer, H. J. Love, 933 Leader-News Building, Cleveland.

Machine Tool Shipments to England

United States customs figures show metal working machinery exports to Great Britain in the first nine months of 1924 amounting to $2,268,954, an increase of 22 per cent over the $1,842,470 for the first nine months of 1923. In the last part of 1924 plant extension and replacement began to assume importance in Great Britain. The railroads placed substantial orders and the automobile industry began to consider renewals. Indications for the present year favor a gradual increase in the demand for American machine tools in England, according to reports to the Department of Commerce. The improvement in tone of the machine tool market, as reflected in increased purchases from the United States, should encourage the American manufacturer to renew sales effort.

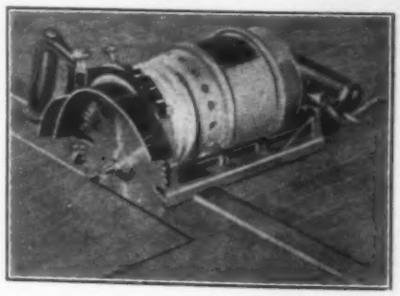
Among the machinery exports showing greatest gain in 1924 was textile machinery, which increased from $904,285 to $1,694,731 in the nine months. The principal item in this group was knitting machines, which increased from $584,369 to $1,066,455. Unclassified textile machinery exports increased from $247,384 to $545,153.

Portable Electric Hand Saw

A portable electric hand saw, known as the Casey, which among other uses is adapted to the rapid trimming of box car tops and roofs, is being marketed by the Router Mfg. Co., Oskosh, Wis. In trimming car roofs, the cutting speed is 15 ft. per min.

The device is made up of a small Westinghouse electric motor mounted on a frame similar to a carpenter's plane, and a circular saw on one end of the motor shaft is rotated by the motor as the frame is pushed over the work. A guard is provided over the rotating saw. Saws of various sizes may be used, which permits of employing the machine for a diversity of work. Two handles, attached to the frame, serve as a means of guiding the machine. Power is taken from an electric light circuit through a flexible cord.

Inlay work on doors, interior finishing and laying



Portable Saw for Use In Trimming Box Car Roofs and In Repairing Floors

of flooring are among other uses for the saw. The device can be set for any degree of miter cuts and by mounting a wood wedge that screws to the metal base of the machine with a track slide groove fitted in the wedge base the circular saw will cut at any desired angle.

The Algoma Steel Corporation, Sault Ste. Marie, Ont., established a new monthly record in nearly all departments and also a new high record for its rail mill during March, when 35,099 tons of rails was made. The previous high rail record was 30,630 tons, made in July, 1913. Owing to the shortage of storage space, the rail mill went on single turn, Monday, April 6, for two weeks, or until such time as the opening of navigation will give the boats a chance to relieve the congestion of rails piled at the mills.

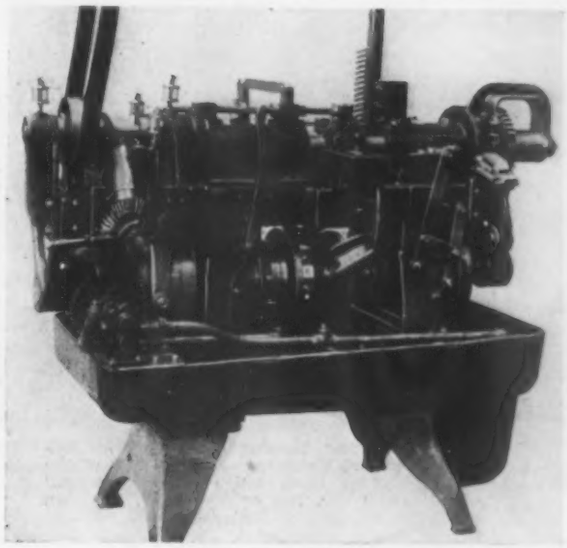
Charles G. Dawes, Vice-President of the United States, will receive a personally delivered invitation to attend the twelfth annual convention of the National Foreign Trade Council to be held in Seattle, June 24, 25 and 26. The invitation will be extended by a representative of the Seattle Chamber of Commerce.

CAP SCREW POINTER AND FACER

Fully Automatic Machine Accomplishes Pointing and Shaving Processes Simultaneously

The Kent Machine Co., Kent, Ohio, maker of machines for second operations on screw-machine and header products, has placed on the market the machine here illustrated, which is intended primarily for pointing and facing upset head bolts, cap screws and similar parts.

The machine is automatic in its cycle of operations. Both the pointing and shaving processes are accomplished simultaneously and without removing the cap screw or bolt from the machine. The machine may be arranged for belt drive and magazine feed, as illustrated, or for motor drive and hopper feed. The capacity of the magazine is for 25 to 45 screws, which are held by their heads in a slide. The magazine is adjustable for screws of different sizes and pointing and shaving tool adjustments are provided for the various lengths and diameters within the capacity of the machine. Screws with body diameters of ¼ to ⅝ in. inclusive, and ¾ to 4 in. long may be pointed and faced.



FEEDING, Chucking, Pointing, Shaving and Ejecting of the Bolts or Cap Screws Are Entirely Automatic. Both the pointing and shaving processes are accomplished without removing the bolt or screw from the machine and both operations are simultaneous. Filling of the magazine is all that is required of the operator, who can handle three machines. Increased output, and reduction of labor cost and overhead are claimed for the machine

Three machines may be attended by one operator, who is merely required to keep the magazines filled. After the screws or bolts are placed in the magazine, they are fed by gravity down the magazine slide and, one at a time, are pushed forward by means of a pusher rod into a revolving work-holder. The latter has four chucks or plugs mounted in it and is indexed to make one-quarter of a revolution. The chucks are in halves and are held together by bolts on which are mounted springs. The springs tend to open the chucks slightly except when acted upon by a gripping mechanism provided, which is controlled by a cam located on the main cam shaft. This mechanism is operated by a plunger and serves to force the two halves of the chucks together, thus gripping the head of the screw or bolt after it has been fed into the work-holder.

In the first work position the screw or bolt is pointed by a standard adjustable roller box-tool which operates in a revolving spindle. As noted above, the disk or work-holder has four holders or positions. With the pointing position designated as No. 1, No. 2 will be an idle position. In the No. 3 position the head of the screw or bolt will be shaved, which operation includes both the top and under side of the head, the top being chamfered or rounded and the under side shaved flush.

As the work-holder is indexed into the third position a transfer head, with three fingers, is cammed over to grasp the bolt or screw. Meanwhile, a cam-actuated pusher rod advances to push the piece from the work-holder and place it in a revolving chuck. The transfer head rides automatically with the work held in the fingers, and this action, combined with that of the pusher rod, carries the screw or bolt to a revolving chuck, where it is gripped. This chuck is provided with an adjustable stop so that the piece is fed into it only to a predetermined length, thereby lining up the head with the facing tools. The chuck is opened to receive the piece by a cam-operated spool and finger arrangement.

After the piece is entered in the chuck, the transfer head and pusher rod are withdrawn by means of a positive cam, and a forming slide is cammed over on to the work. The forming slide carries a special tool holder having two circular forming tools, which chamfer the top and face the under side of the head of the screw or bolt. When the head of the bolt or screw is shaved, the piece is ejected automatically, this being accomplished by a spring on the end of the discharge rod which pushes the rod through the spindle as soon as the chuck is opened.

Although just being placed on the market, machines of this design were used for several years at the plants of the National Acme Co., Cleveland, from which company all drawings, patterns and manufacturing rights have been purchased by the Kent company.

Business Men and Government Cooperate in Extending Commerce

WASHINGTON, April 7.—Extending further its cooperation with business interests of the country for the purpose of aiding them in expanding trade, the Bureau of Foreign and Domestic Commerce has had 50 practical lumber exporters agree to join a committee to help the department in its work of selling American lumber abroad. This movement, taken with regard to developing foreign business for the lumber trade, just announced by Secretary of Commerce Hoover, is being followed in other industrial lines.

Discussing the significance of the newly appointed Lumber Export Committee, Julius Klein, Director of the Bureau of Foreign and Domestic Commerce, stated that a very large share of the Commerce Department's success in selling American goods in foreign markets is due to the fine attitude of leading exporters in different commodities in joining the so-called industrial advisory committees of the department. The iron and steel industry is not represented on the committee.

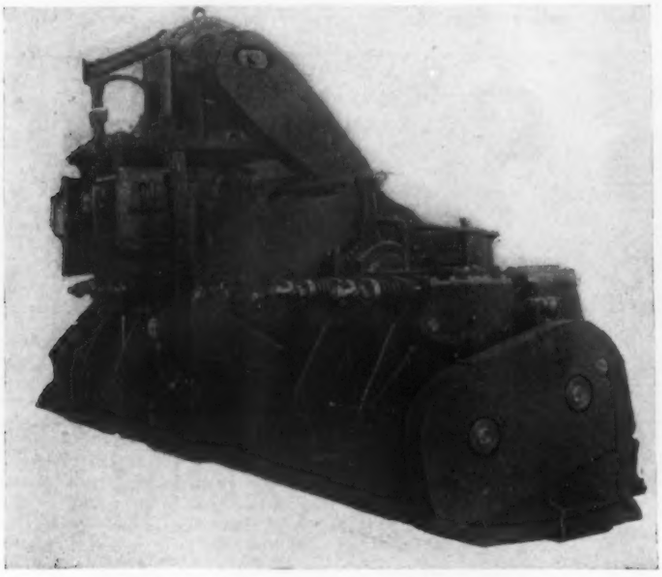
There are nearly 70 of these committees, with memberships made up of several hundred recognized leaders in business, manufacturing, farm cooperative associations, shipping and banking.

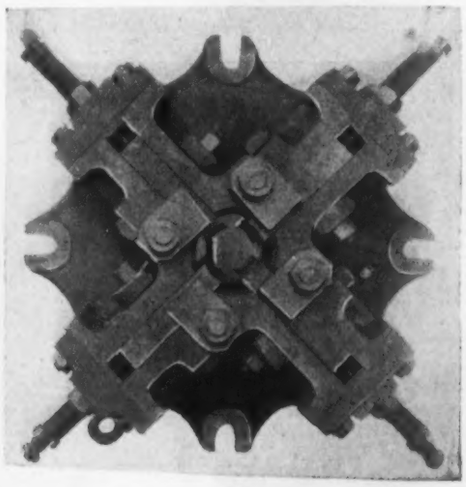
Improves Shafting Turning Machine

Heavier construction to permit of greater cutting feeds and speeds than in its previous machines is the outstanding feature of the shafting turning machine illustrated, which is a recent addition to the line of the Brightman Brothers Co., Columbus, Ohio.

The machine is available in three sizes, the smallest being for shafts ½ to 2 in. in diameter, the next for 1 to 4 in. shafts, and the largest for shafts from 2 to 6 in. The shortest length which can be turned is 8 ft. The initial drive is from a constant-speed motor mounted on top of the machine, as shown. From the motor, power is transmitted by a Link-Belt chain to the drive-gear shaft and change gears to the main spindle. Spindle speeds range from 45 to 345 r.p.m. for wear is provided. Ample chip and cutting lubricant space is a feature, the coolant being arranged to flood the tools before the cutting operation begins. The cutting lubricant is pumped to the head by means of a motor-driven Fulflo pump unit of 35 gal. per min. capacity. The controls for inching the spindle and for making adjustments on the cutting heads are within convenient reach of the operator. The motor and electrical controls are part of the regular equipment, as is also the crane for lifting the cutting heads in and out of the machine.

The cutting head, a front view of which is shown at the right, can be arranged with one, two or four tools, for light or heavy turning. Provision is made for the replacement of the caps, which hold the adjustment





Shafting Turning Machine With Improved Features. A front view of the cutting head, which can be arranged with one, two or four tools, is shown above

The feed shaft is chain driven through change gears and a safety worm drive, and feed reversal is provided to facilitate setting of the cutting tools to the proper size on the bar. The feeds obtainable range from 1/16 to ⅜ in. per revolution of the main spindle.

An automatic gripping and feeding mechanism at each end of the machine is a feature, and relief has been provided for in this mechanism to compensate for irregularities in hot rolled stock. The main spindle is mounted in Gurney radial bearings and adjustment screws. Two heads of each size cover the range of the machine.

Production varies according to the class of material turned. In a recent test special bearing steel of 1 15/16-in. diameter is said to have been turned at the rate of 42 in. per minute, lineal feed. The floor space occupied by the two largest machines is 5½ ft. by 16 ft. The height is 8½ ft. Stock may be stored at each end, and in line with the machine, which permits of leaving the aisles clear.

Machinery Business in China

WASHINGTON, April 7.—A review of the engineering and machinery business in China for 1924 shows little of importance as differing from the situation in 1923, says Trade Commissioner G. W. Howard, Shanghai. There was a continued absence of orders placed by the Government for railroad materials and machine shop supplies. Practically all the Chinese industrial enterprises maintained the policy of buying mill supplies and equipment necessary for plant operation in sufficient quantities for monthly needs only and in some cases only to meet daily requirements. This has led the importing and engineering houses to cater to this trade from stock deliveries as the only way to secure the business. During 1924 there was a regular market for supplies of various kinds, but few large contracts have been placed for new enterprises, most of them being for small extensions to already existing factories. The unfavorable financial conditions of many of the railroads of North China have made sales of railway machine shop equipment difficult.

The machine tool market has been dull generally although considerable quantities of metal-working machinery were sold to arsenals in 1923 and delivered last year. Practically all the arsenals are running at full capacity with the machinery ordered installed and in operation. In the machine tool market, as well as in general machinery lines, the year 1924 was a period of curtailed business with keen competition on orders of any importance. Credit questions have been subjected to the keenest scrutiny and there has been a growing tendency to force firms to refuse to finance engineering contracts on long deferred terms.

Armored Weatherproof Connector

An armored weatherproof connector the feature of which is that it can be connected or disconnected instantly without tools has been brought out by the Ohio Electric & Controller Co., Cleveland. It is designed to carry 150 amp. continuously, which is considered ample for lifting magnets or the majority of motors.

When connected, the device is held by a double bayonet lock. Butt contacts are secured by 20 lb. spring pressure and may be compared to solenoid switch or circuit breaker contacts. A 15 deg. wipe is provided to keep the contacts clean. Holes for the cable are 5/16 in. in diameter and the terminals may be removed and the wire or cable soldered in.

ADDRESSED BY RADIO

Indianapolis Branch of N. M. T. A. Broadcasts Speech of Dr. Gus W. Dyer

INDIANAPOLIS, April 4.—The nineteenth annual meeting of the Indianapolis branch of the National Metal Trades Association was held April 2 at the Shortridge High School Building. Dr. Gus W. Dyer, head of the department of economics at Vanderbilt University, Nashville, Tenn., was the principal speaker. Dr. Dyer spoke on the "Economic Effects of Industrial Relations." The address was broadcast to radio listeners. Industrial organizations throughout the Middle West notified their membership of the program and it is thought that a large number of employers heard the address by radio. All routine business of the organization was transacted prior to the meeting. Dr. Dyer spoke under the joint auspices of the metal trades association, the Associated Employers of Indianapolis, the Indiana Manufacturer's Association and the Indianapolis Foundrymen's Association.

W. D. Hamerstadt, of Rockwood Mfg. Co., was elected president of the Indianapolis branch. Mr. Hamerstadt succeeds W. D. Oakes of the Oakes Mfg. Co. Other officers elected were: Vice-president, Ulysses G. Leedy, Leedy Mfg. Co.; treasurer, L. M. Wainwright, Diamond Chain & Mfg. Co.; executive committee (two year terms), F. P. Nehrbas, Stutz Motor Car Co.; Alfred Kauffmann, Link Belt Co.; P. F. Wright, Central Machine Works; (one year to succeed Mr. Leedy, who was elected vice-president), and James H. Hooker, Sinker Davis Co. Holdover members of the executive committee are O. B. Iles, International Machine Tool Co., and Alfred W. Thompson, Fairbanks-Morse & Co. The members of the eleventh district committee are R. P. Johnson, chairman, Warner Gear Co., Muncie, Ind.; D. O. Thomas, Muncie Products Division, General Motors Corp., Muncie, Ind.; D. E. Ross, Ross Gear & Tool Co., Lafayette, Ind.; John T. Wilkin, Connersville Blower Co., Connersville, Ind., and W. H. Simmons, Bemis Brothers Bag Co., Indianapolis.

URGES CODE ADOPTION

Lee H. Miller Addresses Meeting at Seattle, Explaining American Institute Plans

SEATTLE, April 4.—Hearty cooperation of structural steel fabricators representing more than 95 per cent of all the structural steel made in this country, with the American Institute of Steel Construction, has made possible the saving of not less than $30,000,000 annually on the money spent in this country each year on steel building construction work, was asserted in an address made by Lee H. Miller, chief engineer of the institute, at a meeting held in the auditorium of the Chamber of Commerce at Seattle Tuesday evening, March 31, at which about 175 persons were present, representing the steel, contracting, building and allied interests.

The meeting was arranged by a committee consisting of George H. Hardenbergh, general manager Hofius Steel & Equipment Co. and G. W. Klinfelter, Wallace Equipment Co., both of Seattle, representing the steel fabricating trade, William Pigott, president Pacific Coast Steel Co., representing the steel trade, C. R. Huntington, American Institute of Architects, W. T. Butler, Associated General Contractors, and A. F. Downey, representing the Seattle Chamber of Commerce. This committee tendered a luncheon to Mr. Miller at the new Hotel Olympic at noon on the day of the meeting.

Mr. Miller in his address, referred briefly to the objects of the institute. He said that one of its chief objects was to effect an actual saving of 12½ per cent on the amount of structural steel required for any specific job, and that this was well on the way to be fully attained, also that other important economies have been made possible by the institute, and it had been of great benefit to the trade in other ways. It already has an active membership of more than 200, and is growing.

Referring to the confusion that has existed in the structural steel industry during the past 35 years, Mr. Miller said that the institute had already succeeded in eliminating much of this confusion. For years, he said, the use of steel in buildings had been regulated by local building codes, no two of which were alike. Now, however, with the general recognition of the institute's standard specification, the industry is getting closer to the standardized condition so greatly desired, and once generally adopted, will make for maximum economy in steel building construction. He said that the use of open-hearth steel, instead of Bessemer, as in the early days of the use of steel in building construction, had resulted in a higher and more uniform grade of steel, which made possible the essential features of the standard specification of the institute.

He explained briefly the manner in which the specification made possible the saving of the 12½ per cent in the amount of steel required for a structure by stating that the basic unit stress used in the specification, from which point all steel loading is figured, is 18,000-lb. per square in. instead of the 16,000-lb. unit used heretofore. This higher unit stress, he said, is nothing more than asking the present improved grade of steel to do the work it is really capable of doing, and without sacrifice in the factor of safety.

Mr. Miller concluded his address by saying that the code of standard practice, which covers points not touched in the standard specification, has been pronounced by leading engineering authorities as the most complete work of its kind that has been developed for any industry. He said that it is accomplishing remarkable results in eliminating sources of misunderstandings between buyer and seller, and has placed the fabrication, erection and sale of structural steel generally upon a much more satisfactory basis. He said that the only thing necessary to make the code operative is for the buyer and seller to execute a standard form of proposal, agreeing that all materials are to be furnished and labor performed in accordance with the provisions of the code.

It is stated that more than 25 large cities in the United States have adopted this standard code, the first city on the Pacific Coast to do so having been Los Angeles. It is believed that in a short while, Seattle, Portland, San Francisco and also other coast cities will see the advantage of operating under this code, and will also adopt it.

Production of Rails in the U. S. Decreased Last Year

Production of rails in the United States in 1924 as shown by statistics just made public by the American Iron and Steel Institute declined 16.22 per cent, the total for 1924 being 2,433,332 gross tons. Bessemer rails have almost vanished, the total being only 16,069 tons. Production of renewed and rerolled rails was 121,508 tons, of which 109,730 tons was rolled from old rails. Production of alloy-treated steel rails amounted to 5167 tons in 1924, compared with only 2142 tons in 1923.

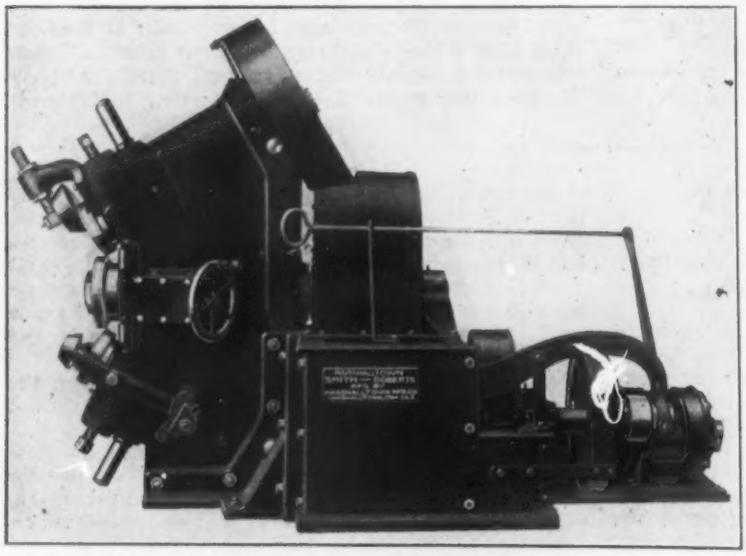
Production of Rails by Processes, Gross Tons, 1912-1924

Year	Open-Hearth	Bessemer	Rerolled	Electric	Total
1912.....	2,105,144	1,099,926	119,390	3,455	3,327,915
1913.....	2,527,710	817,591	155,043	2,436	3,502,780
1914.....	1,525,851	323,897	95,169	178	1,945,095
1915.....	1,775,168	326,952	102,083	....	2,204,203
1916.....	2,269,600	440,092	144,826	....	2,854,518
1917.....	2,292,197	533,325	118,639	....	2,944,161
1918.....	1,945,443	494,193	101,256	....	2,540,892
1919.....	1,893,250	214,121	96,422	50	2,203,843
1920.....	2,334,222	142,899	126,698	297	2,604,116
1921.....	2,027,215	55,559	96,039	5	2,178,818
1922.....	2,033,000	22,317	116,459	....	2,171,776
1923.....	2,738,779	25,877	139,742	118	2,904,516
1924.....	2,307,533	16,069	109,730	....	2,433,332

Shear for Beveling Large Plates

A rotary bevel shear which combines the standard bevel shear with the inverted type and permits of beveling from both sides of a plate without turning the plate before passing through the rolls has been placed on the market by the Marshalltown Mfg. Co., Marshalltown, Iowa. By thus eliminating the necessity of turning large plates, the danger of accidents is reduced, and it is claimed that the labor of handling large and heavy plates is materially reduced. The machine, known as the Marshalltown-Smith-Roberts double rotary bevel shear, is designated as the No. 234.

The arrangement of the machine, the capacity of which is for beveling ¾ in. and lighter material, may be noted from the accompanying illustration. The upper and lower cutters are 9 in. by 2 in., and the center cutter is 11 in. by 2 in. All three cutters are of tool steel. The depth of throat is 4 in. The machine operates at 285 r.p.m., at which speed it cuts 8 ft. per min. The distance from the floor to the cutting edge of the top cutter is 36 in. and from the floor to the edge of the lower cutter 25 in.



Material ¾ In. and Lighter May Be Beveled from Both Sides Without Turning. Accidents are reduced and there is a reduction in labor costs

The machine may be arranged for either belt or motor drive, the latter being standard. Belt driven shears are provided with a friction clutch pulley and the motor-driven machines with a friction clutch gear, which permits of stopping the shear and leaving the motor running. For motor drive, a 7½ hp. 1200-r.p.m. motor is recommended. The size of pulley required is 26 x 6 in.

The head and base of the machine are gray iron castings and the gears are of steel and cast iron. The floor space occupied is 4 ft. 6 in. by 7 ft. 4 in. The net weight of the machine is 8500 lb. A similar machine of 1 in. capacity will be placed on the market later.

A fourth edition of the Transformer Standards of the Electric Power Club, Cleveland, has been issued under date of January, 1925. This is covered in a 36-page pamphlet showing the arrangement of connections, the ratings and system voltages and taps from various types of transformers and other data connected with the design, installation and use of electric transformers of all kinds.

"Surface Condensers" was the subject of a paper presented at the bi-monthly meeting of the Mechanical Section, Engineers Society of Western Pennsylvania and the Pittsburgh Section American Society of Mechanical Engineers at the William Penn Hotel, Pittsburgh, Tuesday evening, April 7, by J. E. Goodwillie, engineer, Ingersoll-Rand Co., New York.

Production of Pig Iron, Steel Ingots and Castings in Canada

The production of pig iron in Canada during the month of February amounted to 29,506 gross tons, an increase of 4 per cent over the 28,302 tons made in January. The February output included 20,671 tons of basic pig iron, 4432 tons of foundry iron and 4403 tons of malleable iron. The production of pig iron for the first two months of this year amounted to 57,808 gross tons, as compared with 123,990 tons reported for the corresponding period of 1924, the decline in output being 53 per cent. During February two additional blast furnaces were blown in, leaving five furnaces blowing at the end of the month located as follows: British Empire Steel Corporation, Sydney, N. S., 2; Algoma Steel Corporation, Sault Ste. Marie, Ont., 2; Steel Co. of Canada, Ltd., Hamilton, Ont., 1. While there are some 20 blast furnaces in Canada, some five of these have become obsolete or the companies operating have dropped out of business, so that at the present time the Dominion Bureau of Statistics, Ottawa, carries but 15 blast furnaces on its list.

The production of steel ingots and castings in Canada during February rose to 37,221 long tons, or 37 per cent above the 27,126 tons made in January. Basic open-hearth steel ingots rose 9473 tons to a total of 35,624 tons, while steel castings advanced 68 per cent to 1597 tons. For the two months January and February, 1925, the production of steel ingots and castings was 64,347 tons, compared with an output for the first two months of 1924 of 106,710 tons.

Pig iron prices were unchanged during February, as compared with those of January. No. 1 foundry iron at Toronto was quoted at $28.80; malleable, $28.80 and No. 2, $28.30. Basic pig iron at the mills rose from $24 to $25 per ton. On March 9, the Canadian price on foundry and malleable iron declined $1 per ton in both Toronto and Montreal markets.

Garvin Machine Tool Co. to Sell Out

The Garvin Machine Tool Co., Spring and Varick Streets, New York, one of the oldest of present-day machine-tool companies, having been established in 1865, may go into liquidation following an auction sale of its equipment to be held at the plant April 28, 29 and 30 by Samuel T. Freeman & Co., Philadelphia, auctioneers.

For several weeks the owners of the business have been making efforts to effect a consolidation or sell the entire business to avoid liquidation, but, upon their failure to reach any such conclusion, their creditors, principally a bank, insisted upon the auction sale of assets. As soon as a sufficient amount of the equipment has been sold to satisfy outstanding obligations, the sale may be stopped and, if this happens, efforts will probably be made by the Garvin family to carry on the business in some manner. The Garvin plant is one of the few large machine shops still in business on Manhattan Island, other such businesses having been forced to outlying sections because of the increase in property values, taxes and other overhead.

In the list of machine tools to be offered for sale are about 900 machines of nearly all standard types, of which about 400 are Garvin built tools. The products of the company included milling machines, horizontal drilling machines, screw machines and grinding machines.

Beehive coke produced in the week ended March 28 is reported by the Geological Survey at 8,350,000 tons, compared with 8,283,000 tons the week before.

Welding vs. Riveting of Large Structures

Lower Cost and Better Product Claimed for the Welding Process—Experience Shows Welding to Be Safe —More Data Needed

BY W. SPRARAGEN*

THE various processes of fusion welding have received the special attention of engineers throughout the world during the past five or six years. This attention has been caused by high costs of materials, delays in replacement of parts and in some cases the need for an improved product.

In special cases the advantages of welding in producing oil, water and gas-tight construction led to its use as a means of fabricating tanks, pipe lines, vessels and containers of all descriptions. Where methods were standardized large savings and improvement of product were soon apparent as compared with similar riveted structures. Moreover, if properly done, a welded joint could be made equal to the strength of the original material, whereas the riveted and caulked joints leaked below 50 per cent of their ultimate tensile strength, and sometimes as low as 25 per cent.

The success of welding as applied in other fields has led welding and structural engineers to consider its possibilities in the fabrication of large structures, such as bridges, cranes, buildings, etc. The economies which might be effected by substituting this process for riveting are described briefly in what follows.

Economies of Welding Process Outlined

Saving in Weights.—Data from existing examples of this type of construction show that a saving of from 15 to 25 per cent in weight can be secured. The welded joint may easily be made as strong as the parts themselves while the corresponding riveted joint is rarely equal to 75 per cent of the strength of the parts. Moreover, this saving in weight and increased efficiency can be secured by proper welding, and even the weight and cost of the rivets is very little less than the weight and cost of the welding wire.

The elastic features of the welding process commend it especially to this class of work. Sometimes the welded joint may necessarily be so situated that the weld as laid out by the draughtsman cannot be completely made, due to interference by other members, etc. In this case the weld may be shifted somewhat or an extra plate added without any appreciable delay or increased weight and cost. With a riveted member considerable time and cost would be necessitated in preparing an additional gusset plate and riveting it.

Simpler Drawings Required.—With the riveted type of steel structure each rivet must be clearly indicated on the drawings, both with regard to size and position. Considerable attention must be given to laying out the joints so that the members will fit snugly together and yet allow proper clearance for driving rivets. Very often the expense of making these drawings is an appreciable part of the total cost. The drawings for a welded structure are much simpler, as all rivets are eliminated and there are fewer details at the joints.

Elimination of Certain Steps.—The following steps necessary in the shop for the riveted construction are eliminated when the welding processes are used: making templets, marking steel, punching or drilling holes and painting.

Accurate Alinement Unnecessary.—In welding, parts need not be alined as accurately as in riveting. In the latter process it is frequently found that because of inaccuracies of workmanship, holes do not come exactly opposite, but by driving a drift pin the holes are more nearly brought in line. They are then reamed to get a smoother and larger hole before the rivet is driven. The piece to be riveted must be moved around in order to bring the rivet in the proper position in the riveting machine, or else the riveter is portable for use on heavy work and is so arranged that it could be moved about as the rivets are driven.

In outside construction the alinement of rivet holes and the driving of rivets is a slower and more tedious job. Perfect alinement is necessary before the rivets can be driven. With welded construction the members can be fitted in place and considerable freedom is allowed for making joints. If the piece being placed is too long an oxy-acetylene torch may be employed and the joint made. Often times members and plates may be cut to size with the oxy-acetylene torch and the parts welded together. The freedom allowed by the use of the process is one great advantage.

Elimination of Noise.—The elimination of the noise of riveting may not seem of any consequence to the contractor, but undoubtedly he would be happier if his job could be quieter. The elimination of this noise is of the greatest importance to the public, especially in big cities.

Saving in Freight and Handling.—Because of the lesser weight of the material involved, freight and cartage charges will be considerably less.

Superiority of Product.—Where oil, water or gas tightness is required the superiority of a welded product which is tight up to its ultimate strength commends itself as compared to a riveted structure which is only tight up to 50 per cent of its ultimate strength.

"Once tight, always tight," that's the secret of good welding. In any steel structure there occurs inevitably a certain amount of movement due to impact of wind, expansion and contraction, etc. Riveted joints sometimes loosen slightly due to these forces, and in time, unless repaired, there will be trouble. A welded joint is solid and movement cannot take place. The various members become in reality parts of each other and together make one integral whole.

Economies.—The combination of all these factors makes it possible with the use of welding to produce a structure which is cheaper and better than the ones constructed by riveting. The designing is more easily and quickly done. The only shop work required is the cutting of gusset plates and members to the proper size. Assembly and erection are more easily and quickly done and there are few possibilities of delay caused by errors in laying out. The savings may amount to from 10 to 25 per cent of the total cost.

Service Tests Made On Welded Structures

A comprehensive investigation on wide specimens was carried on in England in behalf of Lloyd's Register of Shipping, and these tests have convinced shipbuilders that with proper precautions welding might be used safely in the fabrication of ships.

During the war there was constructed for the electric arc welding committee of the Emergency Fleet Corporation a steel box 12 ft. x 9 ft. x 10 ft., made from ½-in. tank steel plate. The entire box was electrically arc welded, no rivets being used in its construction. The box was subject to alternate applications of 15 lb. internal hydrostatic pressure and 22 in. vacuum more than 200 times and did not develop any serious leaks or failures in the welds.

In 1920 the bureau of buildings of the City of New

(*Continued on page* 1095)

*Secretary, American Bureau of Welding, which is the research department of the American Welding Society.

Equipment and Methods in Die-Casting

Present Stage of Development in Casting of Metals in Permanent Dies Under High Air Pressure—Comparison of Die-Castings with Machined Parts

BY DONALD L. COLWELL*

DIE-CASTING is a term often used for any process of casting metal in molds other than sand. Babbitt metal hand-poured into permanent iron molds, brass poured into plaster of paris molds, and aluminum fed by gravity into iron or steel molds is often called die-cast. Here, however, we limit ourselves to the strict application of the term and use it to refer to the process of casting metals in permanent dies under comparatively high air pressure.

Adhering to this definition, die-casting has its limitations. In the first place, the size of a part that can be die-cast is limited by the machine. No one has yet built a machine that will pour several hundred or 1000 lb. of molten metal into a die several hundred times a day. Castings are now being made which weigh 10 or 15 or 20 lb. each, and the maximum is increasing steadily.

Another factor limiting the casting in permanent molds is the shape of the casting. Generally speaking, only cores which can be withdrawn whole can be used, and all undercuts must be avoided. In other words, the casting must be of such a shape that it can be ejected from the die without damage to either die or casting. There are, of course, exceptions to this rule. Collapsible cores may be used if the expense is warranted. Cores may be cast of a material melting at a temperature below the melting point of the alloy used in the casting, being cast as inserts in the casting and afterward melted out. Part of a casting may be cast first and then used as an insert in another casting, the whole forming a part which it would be impossible to cast in a single operation. However, these methods would greatly increase production costs and are used only in exceptional cases.

Another limiting factor is the material. To date the only alloys successfully die-cast on a commercial scale are those which melt at temperatures below about 1400 deg. Fahr. This eliminates all castings which must be made of steel because of its strength; of a copper base alloy, because of its conductivity or resistance to corrosion; or of some other alloy of a higher melting point because of some property peculiar to that alloy. It is necessary to consider the suitability of the alloy to the job before deciding on die-casting a certain part.

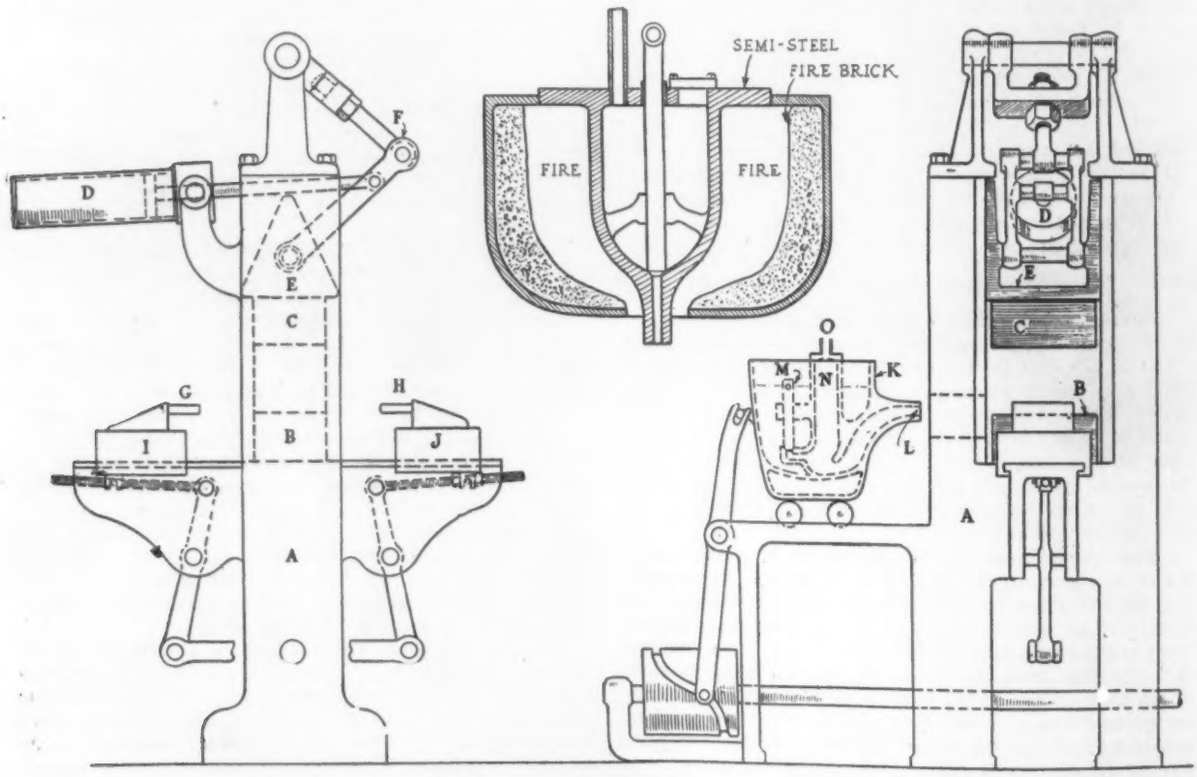


Fig. 1—Diagrammatic Sketch of Vertical Type of Die-Casting Machine, in Two Views
Fig. 2 (Insert at Top Center)—Diagram Showing Type of Closed Metal Pot Used on Machines for Die-Casting Aluminum

A Quantity-Production Process

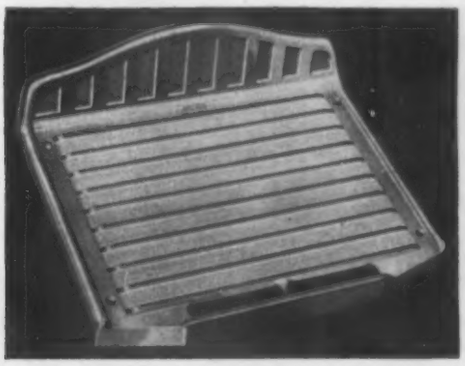
It is probably needless to mention the fact that, unless a given part is to be produced in quantity, die-casting cannot be considered. The dies are relatively expensive and, as the die cost must be pro-rated on the total number of castings, it becomes less and less important as the number of castings increases.

There are always places where a high-grade die-casting is unnecessary; where a cheap, rough, sand

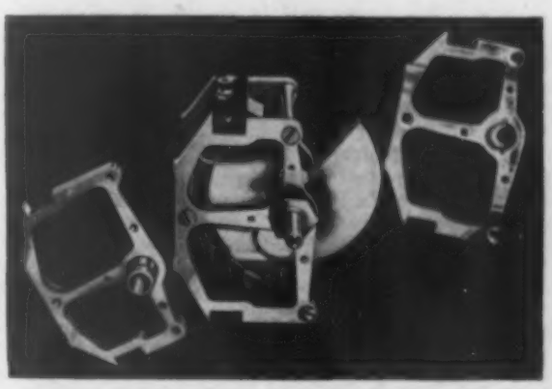
*Metallurgist Stewart Mfg. Corporation, Chicago. He presented this paper March 11 at a meeting of the Chicago section of the American Society of Mechanical Engineers.

casting is plenty good enough. For instance, automobile step plates for higher priced cars are die-cast and have a beautiful finish. Step plates can be sand cast, however, much cheaper, and only a sand cast superficially polished step plate could be made for the price which owners of the lower priced cars can afford to pay. It is good enough, too, for the farmer who must drive his Ford through all kinds of weather and over all kinds of roads.

The first and probably the most important step in making a die-casting is building the die, and the first and probably the most important step in building the die is the original layout. The parting line of the casting must be decided upon, the cores must be located so that they pull out by the simplest method, and the runner, waterways, gates and vents properly located. The latter two items are the most important. Since the metal in the casting solidifies in a very few seconds after it has filled the die, the gate must be of such a shape and in such position that the flow of metal is smooth and even, avoiding pockets, swirls, and other irregularities which would mar the smooth surface. The vents must be located so that all the air in the die is driven out ahead of the metal; otherwise blow holes or trapped air pockets will show up in the casting. The fact must always be borne in mind that this extra metal in gates and vents must be trimmed off of the finished casting, and consequently they must be kept to a minimum.



Die-Cast Aluminum Automobile Step Plate; No Machining Needed



Die-Cast Radio Condenser

It is at this point that the value of long experience in designing dies is brought out. A die designed by anyone not familiar with all of the peculiar quirks that molten metal under pressure can take is bound to give inferior castings, and would probably have to be cut up and patched so much before castings could be successfully produced that its life would be materially shortened. An experienced engineering department, therefore, is the first prerequisite for producing good die-castings.

As soon as the layout is completed, the steel is ordered and the detailed drawings made up. A proper steel, also, is essential to long die life. For lead and zinc base die-castings a good grade of carbon machine steel will last indefinitely if the die is properly built. Aluminum alloys, however, subject a die to greater extremes of temperature, and only special alloy steels can be used here successfully.

The actual building of the die is a job for expert toolmakers. One of the greatest advantages of die-castings is their accuracy and uniformity. It often is necessary to hold certain dimensions in zinc base castings to plus or minimum 0.001 in. and in aluminum to plus or minus 0.002 in. The die, therefore, must be accurate. These same dimensions must be the same on the ten-thousandth casting as on the first; hence any sloppiness in the action of the die cannot be tolerated. An elaborate tool room, therefore, is essential.

After the die is built and sample castings have been made and approved by the customer, it is hardened. Here again special processes are necessary for the special steels used. The hardened die must be exactly the same in size and shape as when the samples were cast, so the heat treatment must be accurately and carefully done. Furnace temperatures must be watched and should be checked by recording pyrometers, and each hardened piece must be carefully tested on the Brinell machine before the die is again assembled. The surface of the die must also be unchanged; carburizing, decarburizing and pitting cannot be tolerated.

Operation of the Vertical Machine

The vertical type of die-casting machine is simply a framework holding two members for the two halves of the die, so arranged that the die can be held closed against a pressure that often amounts to 10 or 20 tons, and then quickly opened to remove the casting, core carriers that will pull the cores in the proper direction at the proper time, and a furnace with metal pot which is brought up to the die at the proper moment, all driven by the same operating mechanism and all with the necessary connections for air, gas, water, etc.

In this machine the stationary lower half *B* of the die is rigidly attached to the frame *A*. The upper half *C* of the die is attached to the sliding head *E*, which is actuated in suitable guides in the frame by the toggle linkage *F* and piston of the air cylinder *D*. When the dies close (they are held together under very heavy pressure) the cores *G* and *H* move transversely on the carriages *I* and *J*, and assume their proper positions in the die. At the same time the metal pot *K* is moved transversely into such position that nozzle *L* registers with the gate in the die parting and presses tightly against the die. The valve *M* is then opened, a sufficient length of time is given to allow enough molten metal (continued in metal pot *K*) for a single casting to enter the chamber *N*. Valve *M* is then closed and air under about 300 lb. per sq. in. pressure is applied to the opening *O*. This forces the metal in *N* out through the nozzle *L* and into the die under high pressure. The die is vented to permit the air contained in it to escape, so that the metal entirely fills the open space in the die. As the die is water-cooled, the metal freezes almost instantly. The machine is then reversed, the metal pot moved back, the cores moved outward, and the die opened.

Into the latter are fitted ejector pins which conform to the shape of the die when the latter is closed, but which automatically move inward as the die opens and force the casting free from the die, after which it is removed by hand. The dies are occasionally lubricated to prevent the metal from sticking. The first casting made after lubrication is usually imperfect and is therefore rejected. In some machines a pneumatic

vibratory hammer is used to actuate the ejector pins.

The halves of the die must, of course, separate a sufficient distance to clear the casting and permit its removal. The type of machine described above is given a rather long stroke, for this reason, and is used for the deep castings. It will be understood that the metal pot must be kept sufficiently hot to keep the metal in the fluid state and at such temperature as to make the best casting. A pyrometer therefore is used in the metal and a gas fire is so regulated as to maintain the desired temperature, and at the same time melt new metal as added. The fire keeps the whole metal pot, including the nozzle, hot, so that the metal will not freeze and fill the passages through which it enters the chamber *N*.

It will be noted that the position of the core carriages *I* and *J* and the metal pot *K* is controlled by levers. The position of the latter is in turn controlled by cams (some of which are not shown), while the dies are opened and closed by pneumatic means. The cams are attached to a shaft or shafts which are in turn driven by belts from shafting under the floor.

Another type of machine is similar to the one just described, except that it is horizontal and the die is moved up to the metal pot. The two halves of the die are cam-operated on slides inclined about 30 deg. from the vertical. The upper half of the die is connected to a bell crank, the near end of which is guided by a pin operating in a slotted cam. Cores carried by cross slides can be employed in this machine also, which is often used for die-casting bearings.

In case it is desirable to have the metal in the casting extremely dense, as in the case of a bearing, the pressure on the metal entering the bearing is increased. In this case a piston is employed in the metal cylinder within the metal pot, actuated by a second piston of larger diameter on which air pressure is applied. A pressure of about 1000 to 1500 lb. per sq. in. is used in casting bearings.

For aluminum a metal pot is used which is closed and sealed and has but a single chamber, containing the molten aluminum at a temperature of about 1150 deg. Fahr. The valve is centrally located and seats directly in the outlet of the casting. An air pressure of 300 lb. is maintained on top of the molten metal, but the latter can flow out only when the valve is open. The walls of the metal pot are surrounded by a fire box lined with fire brick. By keeping the aluminum in a closed container oxidation is reduced to a minimum. The metal pot is filled with molten aluminum by removing the cover plate, which is bolted in place.

It sometimes happens that, due to a small particle of metal becoming lodged between the two halves of the die, it does not close tightly; consequently the stream of molten metal is squirted out from the crack. It is necessary, therefore, to put up sheet metal guards to protect the operator from stray streams of molten metal.

All machines in our plant are built to be operated by one man only. The operator has only to throw the starting lever over to start and to pick up the casting when it is ejected. The cores are automatically set and pulled, the die is closed and opened and the casting ejected automatically, and the air valves are all correctly timed by the machine. Some are driven from line shafting and some have individual motor drive. The advantages of the one-man type machine, over a machine which requires two or three men, are shown in the lower labor cost and in the greater uniformity of castings because of automatic timing of the operations.

(*To be concluded*)

Annual Meeting of Worcester Branch, National Metal Trades Association

Worcester Branch, National Metal Trades Association, held its annual meeting and banquet at Worcester, Mass., March 31. Douglas P. Cook, president, Boston Pressed Metal Co., Worcester, was elected president, succeeding the late Frederick Fosdick of Fitchburg, Mass. Prof. George I. Alden, chairman of the board of directors of the Norton Co., was reelected honorary president, and Charles F. Marble, Curtis & Marble Machine Co., Worcester, was elected vice-president. Secretary Donald Tulloch and Treasurer Arthur W. Beaman of the Stockbridge Machine Co. were reelected.

The executive board as chosen follows: W. W. Shuttleworth, Warren Steam Pump Co., Warren, Mass.; Elliott McKnight, L. G. McKnight & Son Co., Gardner, Mass.; Charles A. Clarke, Universal Boring Machine Co., Hudson, Mass., and of Hill, Clarke & Co., Boston; J. H. Drury, Union Twist Drill Co., Athol, Mass.; J. R. Rogers, A. Hankey Co., Rochdale, Mass.; F. A. Ball, L. S. Starrett Co., Athol, and the following from Worcester: Roger N. Heald, Heald Machine Co.; Philip M. Morgan, Morgan Construction Co.; A. Sherman Miller, Eastern Bridge & Structural Co.; William Arter, Arter Grinding Machine Co.; John C. Spence, machine division, Norton Co., and Henry H. Wright, M. S. Wright Co. The advisory board of past presidents consists of John W. Higgins, Worcester Pressed Steel Co.; Jerome R. George, Morgan Construction Co.; William H. Gates, Baldwin Chain & Mfg. Co., and Albert J. Gifford, Leland-Gifford Co., all of Worcester.

The speakers at the dinner were President Cook, W. L. Huggins, New York, who took for his subject "Some Conflicting Forces in Industry," and Commissioner H. D. Sayre of the National Metal Trades Association, Chicago.

A 4000-lb. horizontal ring type induction furnace at the Pittsfield plant of the General Electric Co. recently completed a run of 667 heats of steel, using the same lining. The furnace is used for melting alloy steel and was lined with Furnite.

Third Conference of Farmers and Manufacturers to Be Held in Cleveland

Agricultural leaders from the New England States, New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois and Wisconsin will gather at Cleveland April 21, to meet the leaders of a number of important manufacturers' organizations in the same States in a conference the keynote of which is a "Better Understanding Between Industry and Agriculture."

In addition to the National Grange and various State granges, the American Farm Bureau Federation, and several State farm bureaus, at least two of the largest dairy organizations will also be represented. The National Metal Trades Association, the National Founders Association, and the National Association of Manufacturers make up the organized manufacturing groups to take part. Special attention will be given at this conference to results already achieved by farmer-manufacturer groups which have been organized in Maine, Wisconsin and Kentucky. The general conference is to be divided into a series of State conferences to discuss the local problems which might lead to similar group organizations in the various other States.

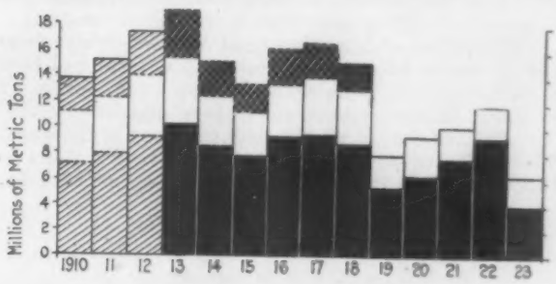
This is the third of a series of conferences along the same line, and under the same auspices.

The executive committee consists of W. W. Coleman of the Bucyrus Co., Milwaukee; Henry D. Sharpe, Providence, R. I.; William H. Barr, Buffalo; Justus H. Schwaacke, Philadelphia, and J. D. Cox, Jr., Cleveland, representing industry, and William J. Thompson, South China, Me.; Sherman J. Lowell, Fredonia, N. Y.; C. A. Dyer, Cleveland; T. C. Atkeson, Washington, and O. L. Martin, Plainfield, Vt., representing agriculture. William J. Thompson, South China, Me., former chairman of the executive committee of the National Grange, is chairman of the Committee on Organization, and Henry Harrison Lewis, Washington, is executive director. The first conference under these auspices was held at Atlantic City last November at the time of the annual session of the National Grange, and the second in New York in the same month at the time of the last annual meeting of the National Founders Association.

German Output of Steel Ingots and Castings

Report of the Association of German Iron and Steel Producers Shows Output by Grades and by Principal Producing Districts for Past 14 Years

BERLIN, GERMANY, March 6.—The Association of German Iron and Steel Producers has now published the figures for German production of steel ingots and castings up through 1923. Prior to October, 1918, the figures include Luxemburg. From November, 1918, however, they do not include Luxemburg or Alsace-Lorraine, while from January, 1921, the Saar district



Total Production of Steel Ingots and Castings in Germany Is Indicated by Heights of the Columns Representing Each Year. The black lower portions of the columns show production of the Rhenish-Westphalian districts, including the Ruhr. The shaded portions at top are of Luxemburg and Alsace-Loraine. District figures prior to 1913 are estimates

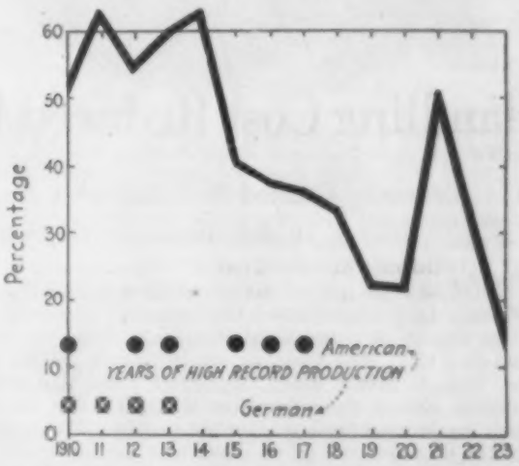
is omitted and from July, 1922, the upper Silesian districts, now belonging to Poland, also are omitted. The figures given for the Rhenish-Westphalian district exclude the Lahn, Dill and Saar districts.

Production of steel in Germany followed along the same general lines as production of pig iron, which was reported at page 764 of the March 12 issue of THE IRON AGE. There was a steady gain from 1910 to 1913, inclusive, each year showing a new high record for German industry. There was a sharp drop beginning with the war in 1914, but a practically uniform production for the five war years. After the war was over a much heavier drop took place and since that time the industry has operated on a reduced scale. The elimination of the production of the various districts severed from Germany by the Peace Treaty does not account wholly for the lowered production of the past few years. For instance, in 1918 the production of Luxemburg and Alsace-Lorraine was slightly over 2,000,000 tons, but the drop in total German production, from 1918 to 1919, was more than 7,000,000 tons.

Germany did not experience the slump in 1921 which set the American industry so far back. On the contrary, there was a definite increase in that year and, except for the year following, 1921 showed the greatest production of any year since the Armistice. Occupation of the Ruhr district by France and Belgium in the opening month of 1923 accounted for the drop of more than 5,000,000 tons from 1922 to 1923.

Kinds of Steel Made

It is interesting to note that, compared with the great fluctuations in the total amount of steel made in Germany, the production of basic open-hearth steel has been relatively uniform (the highest tonnage was 1.84 times the lowest). This is in sharp contrast to the production of mild steel by the basic Bessemer process, which has shown a steady falling off since 1913, and a maximum tonnage of 5.33 times the minimum. In 1913, when both reached their maxima, the production of mild steel was nearly 50 per cent greater than the produc-



COMPARISON of German production with American production makes a story similar to that shown for pig iron on page 765 of the March 12 issue. The ratio prior to the war was between 50 and 63 per cent. As soon as the American industry began to feel the effects of European war orders, however, and jumped to levels never before reached, while the German industry was restricted solely to war needs and fell well below the figures of previous years, the ratio took a sharp drop and during the year 1915 to 1918 ranged between 33 and 41 per cent. Another sharp drop came after the Armistice, when German production fell to less than one-quarter of that of the United States, with a rebound to about one-half in 1921 and a further reduction to below 14 per cent in 1923. On the basis of 1923 results, the latest normal year reported, it may be expected that a rehabilitated German industry will operate at approximately one-third the tonnage figure recorded by American producers

Table I.—German Raw Steel Production
(In Metric Tons)

	Steel Ingots						Steel Castings					Daily Production
	Mild Steel (Basic Bessemer)	Basic Bessemer Steel	Basic Open-Hearth Steel	Acid Open-Hearth Steel	Crucible Steel	Electric Steel	Basic	Acid	Crucible	Electric	Total	
1910	8,030,571	171,108	4,973,569	140,189	93,202	86,188	151,852	111,959	.....	.....	13,698,628	44,767
1911	8,640,164	187,359	5,501,147	281,877	78,760	60,654	167,354	102,018	.....	.....	15,019,333	49,083
1912	9,794,300	187,179	6,650,565	194,924	79,190	74,177	221,331	200,332	.....	.....	17,301,998	56,255
1913	10,629,697	155,138	7,330,424	283,480	84,553	88,881	253,587	109,329	.....	.....	18,935,089	61,879
1914	8,143,619	100,617	5,946,215	274,321	95,096	83,256	210,845	87,243	.....	.....	14,946,213	48,844
1915	6,529,285	164,570	5,423,364	248,649	100,578	131,579	461,816	198,213	.....	.....	13,258,054	43,327
1916	7,653,990	175,109	6,579,892	276,909	108,205	190,036	767,586	430,793	.....	.....	16,182,520	52,884
1917	7,294,899	173,430	7,056,690	217,783	129,784	219,700	666,287	828,827	.....	.....	16,587,369	54,385
1918	6,410,751	148,980	6,593,416	184,490	86,555	240,037	556,010	759,266	.....	.....	14,979,505	49,113
1919	2,904,457	51,174	4,415,752	60,534	40,578	81,761	179,271	113,828	.....	.....	7,847,354	25,726
1920	3,219,624	45,102	5,540,987	74,568	36,390	75,679	154,866	117,596	1,024	12,046	9,277,882	30,231
1921	3,536,007	20,371	5,945,914	105,449	32,496	70,226	181,421	93,352	1,471	8,821	9,996,528	32,452
1922	4,169,517	46,624	6,891,305	142,979	33,735	93,327	203,035	120,439	1,574	11,717	11,714,302	38,407
1923	1,978,001	6,626	3,974,986	65,753	13,546	65,427	131,607	52,746	2,862	13,756	6,305,250	20,538

Table II.—Production of Raw Steel (Ingots and Castings) in the Different German Districts
(In Metric Tons)

	Rhenish Westphalian District	Siegerland, Lahn and Dill Districts and Upper Hessia	Silesia	North, East and Central Germany	Saxony	South Germany	Saar District and Bavarian Palatinate	Alsace-Lorraine	Luxemburg	Total	Percentage in Alsace-Lorraine and Luxemburg
1913	10,112,042	388,297	1,407,304	740,859	331,125	253,020	2,079,825	2,286,354	1,336,263	18,935,089	19.1
1914	8,420,706	306,399	1,173,066	604,793	259,695	144,126	1,390,248	1,510,692	1,136,487	14,946,212	17.7
1915	7,642,122	296,439	1,170,263	543,454	263,580	124,732	1,050,475	1,178,230	978,759	13,258,054	16.3
1916	9,165,033	339,505	1,402,809	694,522	342,899	152,363	1,319,847	1,456,113	1,309,429	16,182,520	17.1
1917	9,343,006	323,937	1,459,526	907,248	419,212	208,364	1,297,393	1,547,107	1,081,667	16,587,360	15.8
1918	8,681,307	270,682	1,344,612	892,188	394,535	202,730	1,113,614	1,223,103	856,734	14,979,505	13.9
1919	5,318,332	118,814	868,362	505,071	230,811	90,705	715,261	.....	.....	7,847,356	0
1920	6,161,630	210,361	1,143,618	600,343	300,628	120,374	740,978	.....	.....	9,277,882	0
1921	7,541,405	252,975	996,933	706,770	323,700	173,496	1,259	.....	.....	9,996,538	0
1922	9,204,245	286,197	782,643	875,731	377,560	186,750	1,176	.....	.....	11,714,302	0
1923	3,915,632	332,648	391,200	1,043,882	445,877	175,707	304	.....	.....	6,305,250	0

tion of basic open-hearth steel, while in 1923 the tonnage of mild steel was less than half that of basic open-hearth steel.

Bessemer steel made by the acid process has shown a steady decline, until it almost disappeared in 1923. Crucible steel likewise has fallen off sharply since the big production of the war years and in 1923 was scarcely more than one-tenth the total for 1917. Electric steel, also, after a steady rise from 36,000 tons in 1910 to 240,000 tons in 1918, has dropped to 65,000 tons in 1923, being only 1 per cent of the lessened total output in the latter year, compared with 1.6 per cent in 1918.

Steel castings likewise have shown a great drop from the large tonnages of the war years, at which period they constituted almost 10 per cent of total German steel production. In 1923, with 200,000 tons, they represented slightly more than 3 per cent of the total.

Elimination of Luxemburg and Alsace-Lorraine from the German producing areas takes away what had been a dwindling percentage of the German total. As shown in Table II, the production of these districts in 1913 was 19.1 per cent of all the steel produced in Germany. This had dropped steadily in the intervening years to 13.9 per cent in 1918, before being lopped off entirely.

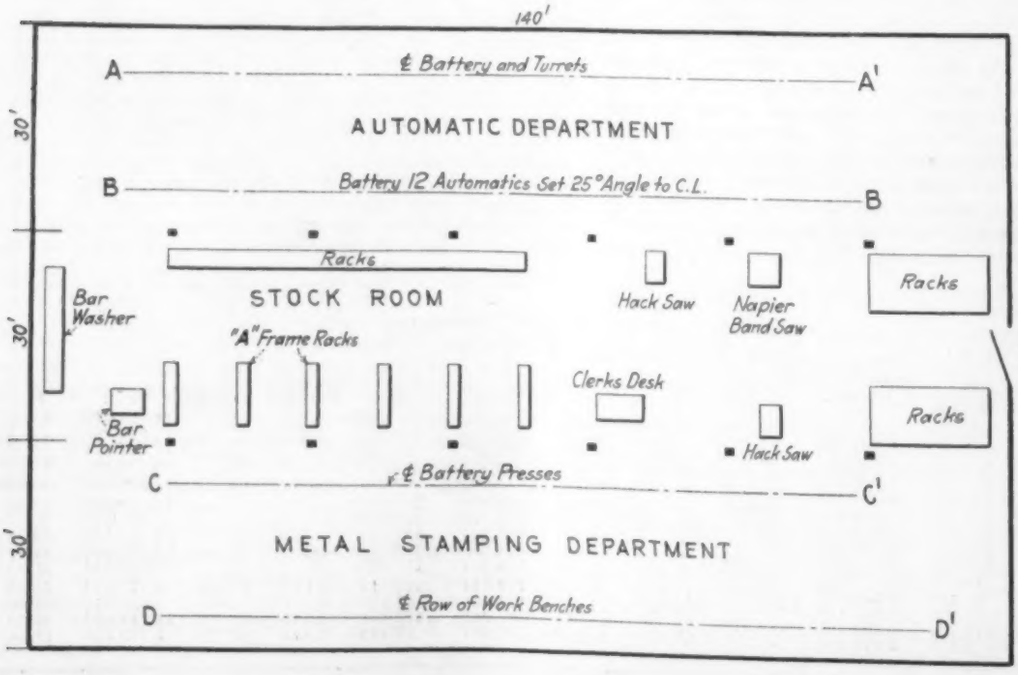
Handling Cost Reduced by Rearranging Stock Room

Centrally Located Building with Automatic Machine and Stamping Departments in Adjoining Bays—Feature of San Francisco Bay Plant

LARGE savings in the cost of handling bar and sheet stock have accompanied the improved arrangement of the new stock room of the Hall-Scott Motor Car Co., Berkeley, Cal. The company manufactures motors for the Fageol safety coach, Ruckstell axles and other products used in the automotive industry. For several years the management studied the problem of simplifying the arrangement of its sheet and bar stock, all of which stock formerly was housed in a building situated about 200 ft. from the main machine shop.

The stockroom, the arrangement of which may be noted from the accompanying floor plan, is in a new building, which was completed during September, 1924. This building is of saw tooth type, 90 x 140 ft., and is located centrally in relation to all parts of the seven-acre plant. The stockroom occupies the center bay and is 30 x 140 ft. On one side, in a similar bay, 30 x 140 ft., are the automatic machines and turret lathes, and on the opposite side is the metal stamping department.

The equipment in the stockroom is simple and is conveniently arranged. The racks are of two general types. Short stock, up to 10 in., is carried in horizontal



Placing the Stock Room in the Center Bay, with Production Departments on Either Side, Has Saved Large Amounts in Handling Costs. Two types of rack are used—horizontal for short stock and A-frames for long stock, which is stood on end

At Left Is the New Stock Room, 30 x 140 Ft., With 200 Tons of Bars Carried Regularly. In the circle is a Napier metal-cutting band saw used in the stock room

racks of the usual construction and long stock is stood on end in steel A-frames, six of which are now in use. They are 9 ft. long, 11 ft. high and 18 in. wide. About 200 tons of bars are carried in stock continuously, but larger stocks may be accommodated if necessary.

A bar washer, bar pointer and three sawing machines are included in the stockroom equipment. The bar washer, at the farther end of the room, was designed by the company for removing the grease from the bar stock, providing clean material for the automatic machines. Rods to be cleaned in the bar washer, which is 12 ft. long, are held in a rack inside of a tank, the cross section of which is semi-circular. The water is preheated in a gas heater, and is then forced into the tank under high pressure, where it sprays the rods, which revolve slowly inside the rack. As the bars come from the washer they are passed to the bar pointer, which points one end to facilitate insertion of the bar in the collets of the automatic machines. An overhead crane is used for handling the stock. Bar stock up to 6 in. is carried, and is used for a number of purposes throughout the plant. Experience has demonstrated the economy of having the cutting-off machines in the same room with the stock. The principal cutting-off machine is a Napier high-speed horizontal metal-cutting band saw of 10 x 10 in. capacity, which requires little room. This machine is supplemented by two power hack saws.

The different classifications of steel carried in stock may be easily identified by number, letter and color. For instance, the number stamped on the bar, multiplied by five, shows the carbon content of the bar. The letter preceding the number shows the classification of the steel, as does also the color that is painted on the ends of the bar. White is used to designate high carbon steel, yellow indicates cold rolled steel, red is used for nickel steel, green shows that the bar is chromium steel, green and red stripes are used for chrome-nickel steel and green and white stripes are employed to mark chrome-vanadium steel.

In the bay adjoining the stockroom on the right, there is a battery of eight turret lathes in a line and at a 25 deg. angle to a parallel center line are 12 automatic screw machines. The stamping and sheet-metal department is in the opposite bay, on the other side of the stockroom, convenient to the supply of material. The presses are arranged for the progressive production of different motor parts, and are all driven by individual motors. The three bays are separated by wire fences.

The Hall-Scott Motor Car Co. is one of the pioneer automotive plants on the Pacific Coast, and its growth has been an interesting factor in the industrial development of the San Francisco bay region. It was organized in 1910 for the manufacture of motor cars, heavy-duty engines and railroad cars. In 1911 it designed and built the V-type motor. Shortly after the outbreak of the World War the company's volume of business increased materially, and when the United States entered the war the company began the manufacture of airplane, marine and speed boat motors. After the Armistice, the company experienced all the difficulties of the early reconstruction period, but it successfully pared down its production to a peace time basis. In 1922 it designed and built a new tractor motor, which was followed by the development of the Fageol safety coach motor and the Ruckstell axle. This year it is operating on a $10,000,000 production schedule.

The officers of the company are: B. S. Scott, president; L. S. Scott, secretary-treasurer; E. S. Hall, general manager, and P. S. Williams, assistant manager, in charge of production.

Railroad Construction in Middle America

Both Central America and the islands of the West Indies are reported by the Department of Commerce to be undertaking a progressive and steady advance in railroad construction, in spite of their chronic economic disturbances and political disorders. It is pointed out that since 1914 there has been a gain of 400 per cent in track mileage, the total at present being 10,000 miles, against 2000 miles at the earlier date. Much of this increase can be attributed to American enterprise in the fruit, sugar and mining regions. A great deal of the railroad material has been sent from the United States.

Cuba has shown the most rapid progress in all this region, and is rapidly overcoming the handicap previously existing of a lack of direct and easy communication between important centers. Under the recently enacted Tarifa law various railroad lines throughout the island are being brought into coordination for efficient railroad service.

A salient pole, synchronous motor, which can be run at either of two speeds without changing the frequency of the power supply has been developed by the General Electric Co. One of these machines has already been built, rated 5000/2500 hp. and 600 and 300 r.p.m., for operation at unity power factor. Possible applications of such a motor would be in mine ventilation, ship propulsion and, when used as a generator, in hydroelectric generation of electricity.

The foundry of the Excelsior Stove Co., Quincy, Ill., recently resumed operations after a long shutdown.

IRON AND STEEL RATES

Various Suggestions Made at Hearing in Eastern Class Rate Investigation

WASHINGTON, April 4.—In the course of hearings in connection with the so-called Eastern Class rate investigation last week before the Interstate Commerce Commission interesting suggestions as to realinement of iron and steel rates were made. O. S. Lewis, of the Baltimore & Ohio, proposed a readjustment of the Buffalo-Pittsburgh relationship by making the first class rate from both places to New York 97c., but leaving Pittsburgh with port differentials to Philadelphia and Baltimore.

Change in this structure manifestly would mean a departure on rates in lower classes including those on iron and steel. Mr. Lewis suggested breaking up the 66.5 per cent group in which Youngstown is now located, and giving that town and other points in the Mahoning and Shenango Valleys the benefit of their location virtually as in trunk line territory in traffic to the East.

Going further, Mr. Lewis proposed the creation of more groups in the southern part of trunk line territory, specifically urging a Martinsburg, W. Va., group to take 84 per cent of the New York-Chicago rate. He also proposed the dividing of the Huntington, W. Va., group and the reduction of rates from the Portsmouth, Ohio, group from 82 to 77 per cent of the basic rate. Additionally, he urged giving the port differential rates to the Youngstown portion of the old Youngstown group while the remainder of the group would be called the Painesville group.

An Old Rule Violated

In reply to a suggestion by Commissioner Eastman that Mr. Lewis was "doing violence" to the long established McGraham scale, Mr. Lewis said that the Buffalo-Pittsburgh situation justified a slight departure from the mileage proposal that had been submitted by the carriers. He proceeded to outline what he said he proposed to do to put Pittsburgh and Buffalo on a basis that would be more satisfactory to Pittsburgh, particularly those of the iron and steel industry. He declared that since the commission's decision in the Pollak Steel case in 1918, Pittsburgh shippers had been dissatisfied. The Railroad Administration in following this decision made the iron and steel rates from Pittsburgh to New York 2c. higher than from Buffalo, doing so by putting Pittsburgh on the fifth class basis.

Approval of the Buffalo-Pittsburgh adjustment outlined by Mr. Lewis was given by E. P. Bates, of the Pennsylvania Railroad, although Mr. Bates did not take such an advanced position as Mr. Lewis did in proposing the breaking up of groups. Mr. Bates said he doubted the wisdom of going into Central Freight Association territory with trunk line adjustments. Mr. Bates explained that, together with Edward Chambers, Director of Traffic in the Railroad Administration, he has induced the Pittsburgh shippers of iron and steel to accept the settlement proposed by the Railroad Administration in complying with the Pollak case on the ground that it was a war measure and that it would be adjusted as soon as conditions were more nearly normal.

Iron and Steel Shippers Complain

Subsequent to that period, according to Mr. Bates, Pittsburgh iron and steel shippers had complained and asked for redemption of that promise. Mr. Bates was asked if the steel industry at Pittsburgh was in such poor condition that it was necessary for it to have equal rates to enable competition with Buffalo. In reply, Mr. Bates said he did not know about commercial conditions, but that on mileage and the old parity Pittsburgh was entitled to rates to New York no higher than those from Buffalo. Mr. Lewis also made the observation regarding the adjustment from Youngstown, that the McGraham formula and the mileage scale had brought about an unwarranted spread between Pittsburgh and Youngstown.

E. A. Niel, freight traffic manager of the Buffalo, Rochester & Pittsburgh Railroad, and O. F. Johnson, general freight agent of the Lehigh Valley Railroad, testified largely about the fifth class rate applying to iron and steel.

Keep Products Moving

"While it may be truthfully said that the present adjustment of class rates in trunk line territory is a hodgepodge or an illogical and unscientific rate fabric," said Mr. Niel, "it must be admitted that notwithstanding its deficiencies, and with the aid of commodity rates, the industries in trunk line territory had built up an enormous traffic during the past 30 years and represent an investment of hundreds of millions of dollars in capital for plants whose locations have furnished a large tonnage to carriers. Revision of rates should not require the application of rates from point to point in all cases, or be made so inflexible as to preclude the maintenance of group relationships where necessary on account of commercial conditions prevailing in many centers of production. The shippers' principal concern, generally, is with rate relationships rather than the volume of the rate itself, and this is a necessary feature of business competition which cannot be ignored."

Rates in which the Buffalo, Rochester & Pittsburgh is interested, he pointed out, were group rates. He favored a basic scale, to be used on the shortest routes, embracing not more than four lines, with enough flexibility to preserve reasonable groupings at large centers such as Buffalo, Rochester, Pittsburgh, New York, Philadelphia and Baltimore, especially to keep iron and steel moving. He advocated the use of commodity rates or special class scales whenever necessary to prevent unjust discrimination and to promote the expansion of industry.

Complaint Issued Against Wickwire Spencer Steel Corporation

WASHINGTON, April 4.—Acted upon before its recent sweeping changes in procedure, the Federal Trade Commission has issued a complaint against the Wickwire Spencer Steel Corporation, New York, charging it with violation of the Clayton act in acquiring the capital stock of the American Wire Fabrics Corporation. The respondent is a manufacturer of screen wire cloth and in the complaint it is alleged took over all of the property assets and business of the American Wire Fabrics Corporation which, the commission states, then ceased to manufacture screen wire cloth.

It is charged that the effect has been to substantially lessen competition. Under the change in rules of practice of the commission proposed, respondents are given an opportunity to be heard before the Board of Review previous to the issuance of a complaint. This change, which, it is believed, will greatly reduce the number of complaints issued, not having been in effect when the Wickwire complaint was issued, the corporation was not given the advantage of it. The complaint charges among other things that the result of the acquisition of the American Wire Corporation by the Wickwire Spencer Steel Corporation is to restrain commerce in the distribution of screen wire in the territories in which the two companies had engaged in business and that the acquisition tends to create a monopoly in the sale and distribution of screen wire cloth.

The car dumper for handling coal recently purchased by the Toledo & Ohio Central Division of the New York Central Railroad for erection at Toledo, Ohio, will be the first car dumper to be erected on the Great Lakes that will be entirely electrically operated. While some of the car dumpers in the East are electrically operated throughout, those in operation at the Lake ports all use steam for the main power functions, which include lifting and dumping. This dumper will have a capacity for dumping cars carrying 120 tons of coal, or the largest that are built. The order for the dumper was placed with the Wellman-Seaver-Morgan Co., Cleveland.

FOREIGN TRADE IN IRON AND STEEL

(1) In February, exports of iron and steel decreased, while imports increased. This indicates the difficulty of developing export trade. Foreign producers can and do undersell us.

(2) In a general way the iron and steel situation illustrates the condition of our total foreign trade. The downward trend of total merchandise exports, and relatively great imports, continued in that month.

(3) Relative stability continues in foreign exchange quotations, the outstanding recent developments being a rise in the Japanese yen and weakness in the French franc. The resumption of an unlimited gold basis by England, though apparently certain, is not likely to come for a considerable time.

(4) The production of iron in the leading foreign countries continued at a high level and was greater in January than in the same month of either 1923 or 1924.

BY DR. LEWIS H. HANEY
Director, New York University Bureau of Business Research

IN February decreases occurred in both exports and imports of merchandise. Some decline is usual in that month, but in this case the decreases were more than the normal monthly variation.

From the point of view of business conditions in general, *attention is particularly called to the decline in total merchandise imports. Imports are a sensitive barometer of the activity of domestic business, and the February figures reflect the check which industrial expansion in this country has suffered.*

Fig. 1 shows the trend of exports and imports. (The curves are three-month moving averages of index numbers which are adjusted to eliminate seasonal variation, and, accordingly, the decline in imports for the single month of February finds expression in merely checking the upward trend of the import curve.) The export curve continues to reflect the general downward trend.

A study of Fig. 1 leads to the following conclusion: (1) The trend of merchandise exports continues downward. (2) The upward trend of merchandise imports has been checked, and the adjusted February figure is only slightly higher than the average for the three months—December, January and February. (3) The trend of the "balance of trade" is downward; that is, *the excess of merchandise exports over imports is decreasing.*

Naturally, the outward movement of gold continues. As long as our merchandise balance of trade continues to become less favorable and European loans continue large, we may expect net

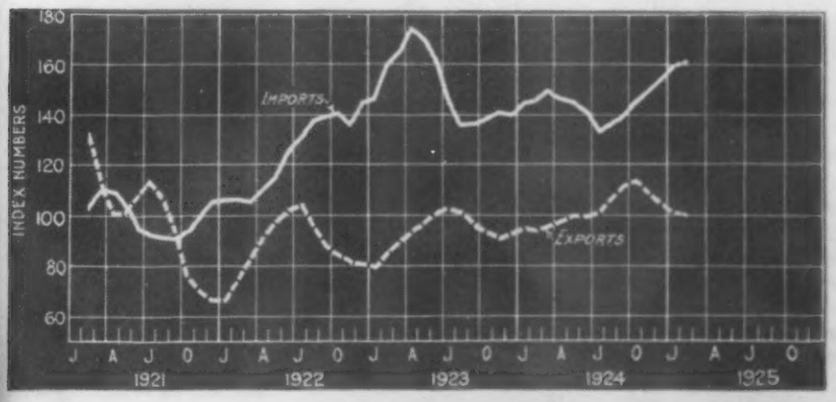


Fig. 1—Merchandise Exports Still Drop: Imports Checked in February

The curves represent the trend of a 3-month moving average of the index of the value of exports and imports as reported by the Bureau of Foreign and Domestic Commerce. The February index is for the single month

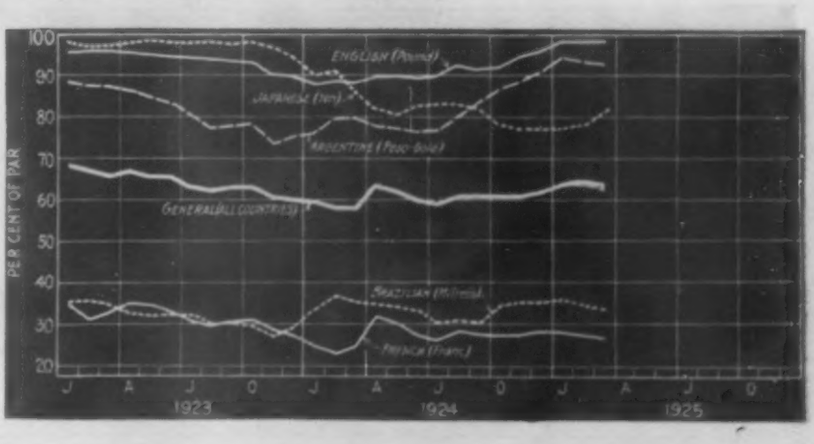


Fig. 2—Further depreciations in Foreign Currencies Hamper Exporters

The curves are based on treasury figures as compiled by the Federal Reserve Board. All exchanges are in terms of the dollar. The curves show the movement of exchanges figured as percentages of their respective pars

exports of gold to persist. Of course, relatively low interest rates and high prices in this country also favor a continuation of such a condition.

In the course of time the outward movement of gold if continued will have some effect in reducing our reserves and tightening the credit situation. A net loss of $133,000,000 in gold in four months, however, is hardly sufficient to have any appreciable effect. Furthermore, the outflow of gold has recently declined and in March appears to have been less than $15,000,000. This decline is doubtless connected with the setback in the advance of sterling exchange.

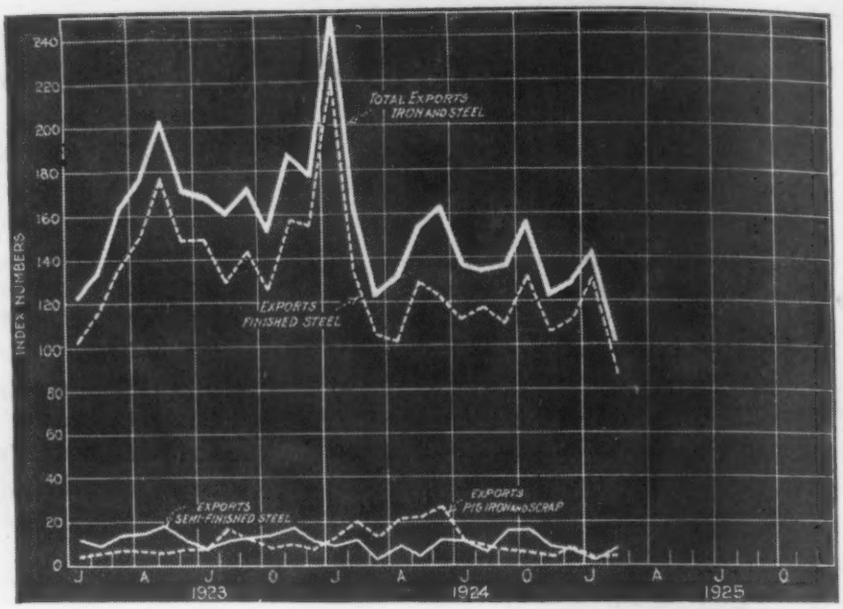


Fig. 3—Iron and Steel Exports Show Usual Seasonal Decline

Based on data by THE IRON AGE from reports of the Bureau of Foreign and Domestic Commerce

Trend of Foreign Exchange

RELATIVE stability in foreign exchange rates continues, as shown in Fig. 2, the fluctuations on the whole being less marked than in recent years.

The chief recent developments have been as follows: (1) The Japanese yen has advanced decidedly, the averages for January, February and March being respectively 77.1, 78.4 and 82 per cent of par. (2) The French franc has been weak, declining on the whole steadily during the last three months. (3) The leading South American exchanges have shown a marked downward trend, but Argentine exchange is considerably higher than a year ago, while Brazil exchange is practically unchanged from last year.

The general weighted average of all the leading exchanges in terms of dollars was up in January. Since then, there has been a small average recession in the pound and weakness in the French franc, which indicate a probability that the combined index will show a downward trend in February and March. Nevertheless, the general statement that relative stability prevails in the exchange market applies.

We are still in the second stage of adjustment in our foreign trade relations (see issue of Feb. 12, page 493). In this stage interest rates in this country continue relatively low, with prices high, while a process of stabilization and firming in foreign currencies goes on. *This stage is not favorable to the expansion of our exports and a general downward tendency therein is to be expected.*

Exports of Iron and Steel

AS predicted in the issue of Feb. 12, late developments indicate serious difficulties in the way of export business in iron and steel. Fig. 3 illustrates the facts. Our February exports of iron and steel were the lowest shown in the graph. Indeed, they were the lowest which have occurred in any month in over three years. The decrease was from 164,820 tons in February, 1924, to 142,725 tons in January and to 101,655 tons in February this year.

The big drop has come in exports of finished steel. The exports of pig iron, scrap, and semi-finished steel all increased in February, but these items are relatively small. Exports of semi-finished steel in February were more than double those in January, but fell far under the figure for February a year ago.

Imports of Iron and Steel

IMPORTS of iron and steel increased sharply in February and were larger than in the same month of the two preceding years.

All the main items gained, but the big increase occurred in pig iron and scrap, as demonstrated by the following figures:

February, 1924—.20,689 tons
January, 1925....55,487 tons
February, 1925...62,305 tons

Imports of finished steel were little different from those of a year ago and the inward movement of this class of products appears to be fairly stabilized.

It seems obvious that as long as foreign producers can ship considerable quantities of iron to this country

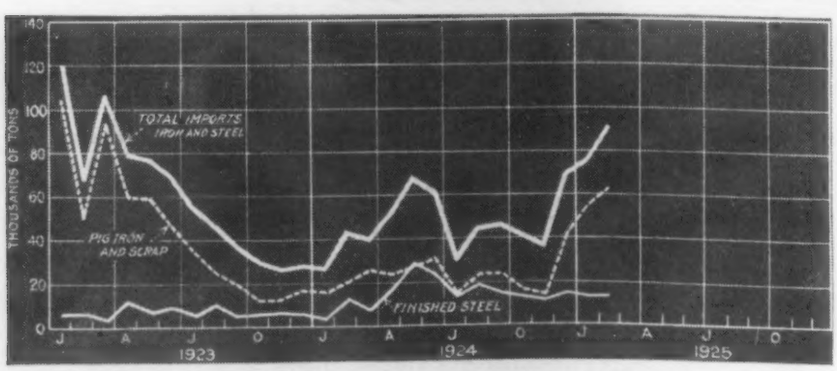


Fig. 4—Imports of Pig and Cast Iron Gain Sharply in February

Based on data by THE IRON AGE from reports of the Bureau of Foreign and Domestic Commerce

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The cost of eliminating the 12-hour day.—It is estimated that $3 per ton has been added to the labor cost of rolling steel by the introduction of the shorter day.—Page 1045.

Germany keenly interested in labor-saving equipment.—Urgent demand for long term loans is the result of desire to finance purchase of modern production equipment.—Page 1035.

Centrally located stockroom cuts costs.—Seven-acre automotive plant moves stockroom to center, directly between automatic machines and stamping presses. Nearness of bars and sheets to machinery they feed reduces handling labor.—Page 1056.

Coke combustibility can be measured.—With a given thickness of fuel bed, sizes of coke and air supply, determination of composition of gases measures percentage of coke combustibility.—Page 1045.

Dies for die casting.—Though special alloy steels must be used for dies to make die cast aluminum, a good grade of carbon machine steel is suitable for lead and zinc base die castings.—Page 1053.

Dawes plan lays heavy tax on German manufacturers.—Reparation bonds tax will amount to 15.73 per cent of industrial capital investment.—Page 1100.

Will foreign loans tend to tighten domestic credit?—Narrowing of favorable trade balance due to diminishing exports, plus loans to Europe, is causing a movement of gold out of United States. In time this may tighten the domestic credit situation, says economist.—Page 1059.

Machinery exports fall off.—February total was 23¼ million dollars, almost five millions under January.—Page 1097.

Physical examination of job-seekers popular among manufacturers.—National Industrial Conference Board finds 57 per cent of plants investigated make physical examination of applicants for employment.—Page 1097.

Welding vs. riveting large steel structures.—A saving of 10 to 25 per cent of total cost is claimed for welding. Structure must be especially designed for welding. Use of the proper welding materials and careful work are important factors in obtaining strength.—Page 1096.

New Cadillac foundries designed to cut hand labor to minimum.—Core sand handled automatically until it reaches the core-maker's bench. Maximum flexibility in pouring directly from the carrier ladle attained by transferring from carrier monorail to electric traveling crane.—Page 1038.

Save 12½ per cent in structural steel.—By specifying basic unit stress of 18,000 lb. per sq. in., instead of 16,000 lb. unit used heretofore, American Institute of Steel Construction has as one of its chief aims a saving of one-eighth of steel required for a given structure.—Page 1049.

Plowing profits back into the business pays.—Dodge brothers broke with Ford on the policy of reinvesting earnings in the business instead of paying large dividends. But Dodge corporation flourished under same policy.—Page 1066.

Pig iron average price lower.—Receding 25c. per ton, the composite price is now $21.29. Steel average unchanged.—Page 1075.

Ore price cut 50 cents.—Lake Superior prices for 1925 have been established at a reduction of 50 cents a ton for non-Bessemer grades. Price now lowest since 1916.—Page 1067.

Gain in locomotive shipments.—March deliveries totaled 109, a gain of 30 per cent over February. Unfilled orders now 447, as compared with 397 at Feb. 28.—Page 1069.

Export outlook unfavorable.—Present stage of adjustment in our foreign trade relations is not conducive to expansion of our exports and a general downward trend may be expected, business analyst declares.—Page 1060.

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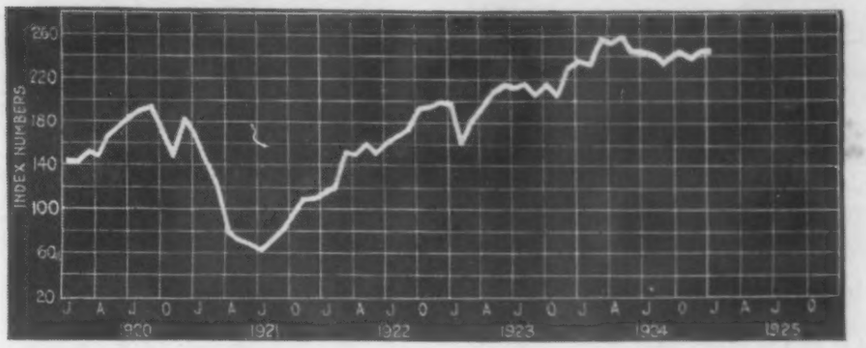

Fig. 5—Foreign Production of Pig Iron Holds at High Levels

The trend of the combined monthly outputs for England, France, Belgium and Luxemburg and Canada

and sell it in competition with the domestic producer, the chances of large and profitable exports in iron and steel are far from bright.

Foreign Production of Pig Iron

As shown in Fig. 5, there was practically no change between December and January in the production of pig iron in the chief foreign producing countries. The figure for January, however, was 3.3 per cent larger than the total in January, 1924, and over 22 per cent larger than in January, 1923.

The curve shows only a moderate recession in foreign iron production since the 1924 peak and indicates a continued high level of output. There were gains in France, Belgium and Canada. The United Kingdom and Luxemburg showed decreases. In Great Britain the general trend has been downward since last spring and the decrease in February was a continuation of an unbroken decline during the past four months. Reports from England indicate limited transactions in pig iron and continued weakness in prices. The British steel trade, moreover, shows no gains and continues to be affected by severe foreign competition.

The Iron Age, April 9, 1925

Low Coal Hurts Market for Industrial Oil Burners

High Thermal Efficiency Attained by Oil Burners—Progress in Standardization of Oil Nomenclature Reported at Convention of Oil Burner Manufacturers

DIFFICULTY of marketing industrial oil burners in the face of present low prices of bituminous coal was a matter of comment in an address by Edward P. Bailey, National Airoil Burner Co., Philadelphia, president of the American Association of Oil Burner Manufacturers, at the second annual meeting of that organization held at the Edgewater Beach Hotel, Chicago, April 1 to 3 inclusive. The same subject was touched upon by John P. Leask, Peabody Engineering Corporation, New York, who read a paper entitled "Some Reflections on Basic Engineering Experience in Oil Burning." In a power plant, he said, oil must compete with coal on a dollar-and-cent basis. Manufacturers have produced industrial oil burners which closely approach the maximum of theoretical thermal efficiency. In fact, the average efficiency attained in four years of service in a given industrial plant was 79 per cent.

The rapid combustion of oil is due to the fineness of the atomization of the liquid, he stated. Two common methods of atomizing are through the use of compressed air and steam. The application of compressed air is limited, as its use usually involves higher cost than the employment of steam. The amount of air mixed with the oil vapor should not exceed, by more than 20 per cent, the amount theoretically required. One of the chief causes of lack of economy in oil burner installations, he asserted, is an excessive admixture of air. There is little danger connected with the use of too little air, because smoke is a never-failing warning of insufficient air. Very complete combustion has been obtained in industrial applications of the oil burner. In fact, an installation of the plant of the Southern California Edison Co., Long Branch, Cal., showed an analysis of 14 to 15 per cent carbon dioxide in the stack gases.

Analysis of Combustion

Oil burner manufacturers have been concentrating their attention on obtaining a relatively high percentage of carbon dioxide with no smoke. The flue gas analysis, however, merely measures the result of a chemical reaction, and it is important to find out what variables affect that reaction, said James L. Breese, Jr., Breese Engineering Corporation, Chicago, who read a paper entitled "Analysis of Oil Flames." The candle is the simplest form of oil burner, and Mr. Breese presented the results of a careful study of the candle flame. The addition of air is not a cure-all for combustion difficulties; the temperature and velocity of the air are important, also. Air may be added to wood within velocity limits of only 300 to 900 ft. per min., without causing the flame to leave the wood and thus to blow out the flame. An oxy-acetylene blow torch has a flame no larger than that of a candle, but generates much more heat. The velocity of flame propagation is a function of temperature. In a blow torch, through the introduction of pure oxygen, there is no necessity for heating the hydrogen, as when air is used for combustion purposes.

Two kinds of noises perplex oil burner engineers. One noise is caused by throwing large globules of oil into a hot chamber, where the globules virtually explode.. The other noise is similar to that produced when one blows against a candle flame, causing it to flutter. The flutter or vibration of a flame sets up sound waves.

Standards for Classification

Progress in the standardization of the nomenclature was reported by W. L. Huff, Honeywell Heating Specialties Co., Wabash, Ind., as vice-chairman of the Committee on Simplification and Nomenclature. The uniform standardization of oils, so far as nomenclature is concerned, is desirable as a guide in oil burner design. Oils have been temporarily classified as follows: non-residuum oils—kerosene, furnace oil for low-pressure burners and domestic fuel oil; residuum oil—industrial fuel oil. The association is continuing its work in connection with this subject, in cooperation with the American Petroleum Institute. It was stated that the opinion is that the oil burner of the future will be one which will burn the heavier oils.

ESTABLISHED 1855

THE IRON AGE

EDITORS:

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C. S. BAUR, *General Advertising Manager*

Member of the Audit Bureau of Circulations and of Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

F. J. Frank, *President* — PRINTED IN U. S. A. — George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, *Pres.* A. C. Pearson, *Vice-Pres.* F. J. Frank, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1.

Subscription Price: United States and Possessions, Mexico, Cuba, $6.00; Canada, $8.50; Foreign, $12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, New York, under the Act of March 3, 1879.

Appraising 1925 Trade

HAD it not been for the very rosy predictions made last November and December of the course of trade in 1925, business men might now be disposed to take things as they come and not make much effort to compare current conditions with those of last year or any other time. As it is, however, there is much inquiry as to where this year really stands in volume of activity.

As the result of the election had a very favorable influence upon business generally and upon buying activity, the year may be regarded as having had at least as good a start as it was entitled to have. It could not be argued that time ought to be allowed to give business a chance to develop.

The start is made and there is now opportunity to observe from day to day what the trend is. A statistical measure may be derived from index numbers of productive activity furnished by the Department of Commerce for the first two months. Averaging January and February in 1924 and 1925, and allowing for the extra working day in February, 1924, percentage changes in industrial activity in the first two months of this year compared with the same months of last year are as follows:

	Per Cent		Per Cent
Raw materials—total.	+5	*Other metals*	+1
Minerals	0	*Lumber*	+12
Animal products	—2	*Leather*	—3
Crops	+13	*Paper and printing*	—4
Forestry	+3	*Chemicals*	+18
Manufacturing—total	+3	*Stone, etc.*	+2
Foodstuffs	—1	*Tobacco*	+3
Textiles	+3	*Automobiles*	—23
Iron and steel	+8	*Miscellaneous*	—7

The best that can be said of this table is that it shows nothing very substantial. It does not indicate a plainly marked and large change, of the year 1925 starting out much better than did the year 1924. There are about twice as many gains as losses, but if business in general were much better this year than last there should be very few losses, and particularly so because when one industry has an improvement that ought to have a favorable influence upon other industries.

Indirectly, on the other hand, the presentation has some points of interest. There is the 8 per cent gain in "iron and steel production" in particular. Long before the year 1924 was ended everyone knew that production in the early months of the year had been too great, hence it is not proof of good prospects that production this year has been greater still. Then in the automobile trade there is the opposite showing. A year ago there had been too much automobile production and the fact that this year shows a 23 per cent decrease may be a favorable augury, rather than otherwise, for the remainder of this year.

By a broader view, not based simply on precise figures, we may conclude that this year is not greatly different in commercial activity from 1924 or 1923, and that as those years showed swings in the business pendulum so may this year also. The conception of the calendar year as a commercial or business unit is a misleading one. We have crops of grain, vegetables and fruit that are annual, but not many other things are really annual, and notions that one calendar year as a whole is going to be "good" or "bad" are likely to warp judgment as to the course of business affairs from month to month.

Further Tax Reduction

IT seems to be agreed that there will be a substantial reduction in Federal income tax this year, applying to what we shall have to pay on March 15, 1926. The main question will be how it is going to be made.

The reduction for 1924, for which year we have just been making payments, was mainly to the benefit of small incomes. There was a little reduction in surtaxes, applying to the larger incomes, but many such taxpayers have found that they were required to pay about as much for 1924 as they did for 1923. Congress went through the motion of making a 25 per cent rebate on earned incomes, but it limited the latter to $10,000, apparently on the theory that no one ought to earn more than that. Furthermore, the Bureau

of Internal Revenue had a way of its own, which was peculiar, in prescribing how this rebate should be computed. The result was that a man who earned an income of $10,000, having a wife and two dependents, obtained a deduction of $47.

It has been announced that Secretary Mellon will not submit any formal plan to Congress, and will withhold all idea of an administration measure that the Democrats would feel bound to oppose. This is a sincere and patriotic decision. We wish that the Republican and Democratic leaders would get together and frame a bill on principles of equity, economic science, and the idea of the general good, without any thought of partisan advantage by scheming something to the special interest of one class of people, or one section of the country, with whom or in which one party considers itself to be politically the stronger.

If the politicians only knew it, this would be the cleverest way of practising politics. Every politician who throws aside petty considerations and so conducts himself in office as to convince the people of his intelligence and patriotism achieves popularity and promotes his party along with himself. The formula is so simple that it is strange that politicians can not learn it. Our greatest complaint against politicians is not that they do not understand economics and commercial business, but rather that they do not understand their own business.

Wage Cost of Shorter Workday

ELIMINATING the 12-hour day apparently added not far from $3 per ton to the labor cost of rolling steel. Last year with 177,078 employed in its manufacturing properties, the United States Steel Corporation produced 11,722,908 tons of rolled and finished steel for sale. This means on the average 66 tons per man.

The accompanying table lists the figures of tonnage and numbers of employees for the years in which the production was not far from the scale of operations last year. The average of the years 1922, 1919, 1915 and 1913 is a production of 2 per cent above that of 1924 and shows 75 tons of finished steel per man engaged in the manufacturing divisions. Adding the year 1912, which showed production 7 per cent above 1924, puts the per capita production at 75.6 tons, and including also the year 1910, when production was 8 per cent below 1924, makes the average 74.5 tons per worker.

Output of Steel Per Employee Per Year

Year	Roller and Finished Steel—Tons	Employees of Manufacturing Properties	Tons Per Employee
1924.....	11,722,908	177,078	66
1922.....	11,785,331	150,847	78
1919.....	11,997,935	188,550	64
1915.....	11,762,639	140,875	84
1913.....	12,374,838	165,277	75
1912.....	12,506,619	161,774	77
1910.....	10,733,995	154,563	69

For years whose output classes them with 1924, the average per man thus has been close to 75 tons. The drop from 75 to 66 may not be charged wholly to the larger forces needed for the present shorter workday, though it is difficult to account for it otherwise, especially as the past year was known as one of relatively high productivity of employees, or larger volume per man than usual.

Assuming that 75 tons per man is reasonable, then if 177,000 employees were required for the 1924 tonnage, a working force of 156,000 would have sufficed with the former working arrangement, or 21,000 fewer employees.

The average number of employees of the United States Steel Corporation last year was 246,753. Assuming that the 177,000 in the manufacturing departments took their numerical proportion of the total amount of the annual payroll, there was chargeable to the manufacturing departments in wage and salary payments $317,000,000. This shows a unit cost of $27.10 per ton of rolled and finished product. If the manufacturing departments had produced 75 tons per man instead of 66, then the unit wage cost would have been $(27.10 \times 66 \div 75) = \$23.85$ instead of $27.10, or $3.25 less.

It may be added that according to William J. Filbert, comptroller of the Steel Corporation, "If we were running fully the estimated cost of the change would be $35,000,000 per year." (THE IRON AGE, Aug. 21, 1924). On the basis that 16,700,000 tons of rolled and finished steel represents full capacity, then the labor cost of the shortened day is a minimum of $2.10 per ton, and the item in 1924 lies somewhere between $2.10 and $3.25.

Rails Last Year

RAIL production in 1924 is reported at 2,433,332 tons, a decrease of 16 per cent from the 1923 production. In each of the years rails constituted about 9 per cent of the total rolled steel, an insignificant proportion compared with the proportions of many years ago, but this merely brings out two things—the growth of steel consumption in other lines and the decline in track laying. Rails are now used chiefly for replacements on the railroads and for various industrial uses.

Beginning with 1914, the rail tonnage has run under the respective tonnages of rods, plates and shapes, with the exception of 1921. It required prescience 20 years ago to predict such a development, but it was not unexpected in some quarters.

When steel, apart from crucible and other special steels, first made its appearance and was destined to supplant wrought iron, its great vogue was in the steel rail, and that remained its principal province for many years. In 1887 production of steel rails was 2,119,049 tons, and that was 72 per cent of all the rolled steel produced; but as 2,311,161 tons of rolled iron was produced in that year it was only 40 per cent of rolled iron and steel combined. The 1887 rail production stood as high mark until 1899, there being increases thereafter to an output of 3,977,872 tons in 1906, which still stands as the record. The decrease in rail production thereafter was due to there being less and less building of new line and secondary track. Rails bought by the regular railroads now are almost exclusively for replacement purposes. This change came rather suddenly.

The tonnage of rails to be used in future for replacements makes an interesting problem. The traffic over the rails increases from year to year,

which would make for increasing tonnages, but on the other hand rails are being improved so that they will stand more traffic. Then there is another factor, the sharp trend toward heavier sections, which means more tonnage for a mile of replacements. No little of the replacing now being done is due to the lightness of the old sections.

The trend toward the rail of 100 pounds and heavier is shown by the record since 1914, in which year production of this class was first separately reported. The proportion of rails 100 pounds and heavier to total rails was 27.2 per cent in 1914, but 50.5 per cent in 1923 and 48.3 per cent in 1924. The growth would seem still more striking if light rails, not used on regular railroads, were excluded. Of rails under 50 pounds to the yard there were produced 272,794 tons in 1923 and 191,046 tons in 1924.

Bessemer rail production passed under 1,000,000 tons in 1913 and under 100,000 tons in 1921, while last year it was only 16,069 tons, all but 938 tons being in sections under 85 pounds.

Latent Demand for Machine Tools

MANY users of machine tools are well aware that economic conditions affecting their production have changed since business was last at its peak. Probably skilled mechanical labor will be scarcer than ever before. Even today, in centers largely dependent upon this class of help, it is by no means easy to get good men, in spite of the fact that shops and factories, as a rule, are doing only a moderate business. Therefore, more dependence than ever will have to be placed on operators trained to do special tasks, and this can best be accomplished with machines of the later types, particularly because of their simplicity of operation, whether hand-controlled or automatic.

American manufacturers are already feeling the competition of foreign-made products into which cheap labor has entered. The only recourse, as production managers view the situation, is the employment of the most highly efficient machinery obtainable, saving in labor and machine time enough to offset the low wages paid abroad, and at the same time keeping ahead of other nations in quality of product. The same policy must be followed in meeting competition at home.

Machine tool builders have accomplished much while they have waited, improving their lines by the addition of new models and by refinement of the old. They deserve much credit for such enterprise in the face of continued poor business. In some ways the development in the past few years has been almost revolutionary. The older types of machines, with their great range of usefulness, have gone out as manufacturing tools, though they will remain as essential equipment of tool rooms and experimental and job shops. On the other hand, the ultra-specialized machine, intended for a particular task and no other, has also lost favor, excepting where production is on so great a scale as to insure it wearing out before a change in the design of its product would send it to the scrap heap.

The tendency continues toward the machine of limited range, designed for maximum output within set limits of accuracy, but at the same time adaptable to a variety of work within its scope. Machine tool designers have done a notable work on this class of machine since the last peak in buying.

A significant feature of the market is that builders have few machines of models which were their main dependence a few years ago. When the slump came their floors in most cases had been pretty well cleared of machines and parts ready for assembling. When the new buying movement comes, perhaps this year, at any rate at no long distant day, buyers will get the last word in machine tool design.

Makers, in surveying the situation, see not so much the disappointments of a succession of lean years as the latent buying power that has been accumulating in that period. The requirements represented in buying plans already made are of large proportions. No doubt much of this prospective business will be held off the market until everybody is aware that the machine tool trade has come into better days. That would be entirely in line with precedent. But there are also, as always, executives who not only have matured plans for economical production through the purchase of new tools, but are taking advantage of conditions that are strongly in their favor both in price and delivery.

Plowing in Profits

THE main reason for the severance of the Dodge brothers from the Ford organization some eleven years ago was their objection to the Ford policy of putting the profits back into the business. In fact, they instituted court proceedings and succeeded in having a large cash dividend declared.

However, when the Dodge brothers formed their own company they followed the policy they complained of while with Ford and plowed their earnings into the business. The other day the Dodge company was sold for cash at more than $150,000,000.

That a man's best investment is his own business was a part of Andrew Carnegie's practice and preaching. "Most business men I have known," he said, "invest in bank shares and in far-away enterprises, while the true gold mine lies right in their own factories." More and more are successful manufacturers demonstrating that Mr. Carnegie was right.

IRON ore prices no longer affect the general steel price fabric as they did when steel was largely Bessemer and scrap was almost unknown as a raw material. Today the steel ingot is at times one-half remelted old steel and one-half pig iron. Only one-fifth of all the steel now made comes from the converter. But a small percentage of the ore produced is handled in the open market—a few millions in a total of 54,000,000 tons last year. In the case of the integrated steel companies the merchant ore price has naturally much less influence on the price of steel than has the price of merchant pig iron, and the latter has long been nearly a negligible factor.

Lake Superior Iron Ore Reduced 50 Cents

Lowest Price Since 1916—On Bessemer Ores, Reduction Is 61 to 71 Cents—Bessemer Differential on Iron Content Wiped Out

CLEVELAND, April 7.—Lake Superior iron ore prices have been established for 1925 at a reduction of 50c. a ton for non-Bessemer ores, making Mesabi non-Bessemer base grade $4.25 and old range non-Bessemer $4.40. The new prices were made by a leading Cleveland ore firm and were announced April 4, or on the anniversary of the day on which prices came out last year. Sales of substantial tonnages have been made at the new prices.

Bessemer and Non-Bessemer Iron Base the Same

While a 50c. reduction in the base price was made, the cut is considerably more on Bessemer ore. The differential in the guarantee of iron content between Bessemer and non-Bessemer ores, which has always existed and which has not been changed for nearly 20 years, or since 1907, has been wiped out entirely. Bessemer ore which has sold on a guarantee of 55 per cent iron, natural, will hereafter have the same guarantee as non-Bessemer ore, or 51.50 per cent iron, natural. Based on 51.50 per cent iron content the new price on Mesabi Bessemer is $4.40 and on old range Bessemer $4.55. Figuring the new Bessemer ore prices on the price basis that prevailed last year, with the guarantee of 55 per cent iron content, the reduction is 61c. on Mesabi Bessemer ore and 71c. on old range Bessemer ore. The guarantee of phosphorus content on Bessemer ore is unchanged at 0.045 per cent. High phosphorus ore with its iron guarantee unchanged at 51.50 per cent has been reduced 40c. a ton to $4.15, lowering from 20c. to 10c. the differential that has existed between that ore and Mesabi non-Bessemer. However, because many of the non-Bessemer ores run close to the Bessemer limit, ores running over 0.045 per cent phosphorus will hereafter be classified as non-Bessemer ore. Heretofore when ore classed as Bessemer ran over 0.045 per cent phosphorus a penalty was deducted.

Prices of Lake Superior Iron Ore, 1890 to 1925

Season	Old Range Bessemer	Mesabi Bessemer	Old Range Non-Bessemer	Mesabi Non-Bessemer
**1925	$4.95	$4.78	$4.40	$4.25
1924	5.65	5.40	4.90	4.75
1923	6.45	6.20	5.70	5.55
1922	5.95	5.70	5.20	5.05
1921	6.45	6.20	5.70	5.55
1920	7.45	7.20	6.70	6.55
1919	6.45	6.20	5.70	5.55
*1918—To July 1	5.95	5.70	5.20	5.05
July 1 to Oct. 1	6.40	6.15	5.66	5.50
From Oct. 1	6.65	6.40	5.90	5.75
1917	5.95	5.70	5.20	5.05
1916	4.45	4.20	3.70	3.55
1915	3.75	3.45	3.00	2.80
1914	3.75	3.50	3.00	2.85
1913	4.40	4.15	3.60	3.40
1912	3.75	3.50	3.00	2.85
1911	4.50	4.25	3.70	3.50
1910	5.00	4.75	4.20	4.00
1909	4.50	4.25	3.70	3.50
1908	4.50	4.25	3.70	3.50
1907	5.00	4.75	4.20	4.00
1906	4.25	4.00	3.70	3.50
1905	3.75	3.50	3.20	3.00
1904	3.25	3.00	2.75	2.50
1903	4.50	4.00	3.60	3.20
1902	4.25	3.25	3.25	2.75
1901	4.25	3.25	3.00	2.75
1900	5.50	4.50	4.25	4.00
1899	3.00	2.40	2.15	2.00
1898	2.75	2.25	1.85	1.75
1897	2.60	2.25	2.15	1.90
1896	4.00	3.50	2.70	2.25
1895	2.90	2.19	2.25	1.95
1894	2.75	2.35	2.50	no sale
1893	3.85	3.00	3.20	no sale
1892	4.50	no sale	3.65	no sale
1891	4.50	no sale	4.25	no sale
1890	5.50	no sale	5.25	no sale

*Prices for 1918 established by the Government.

**For the purpose of comparison in previous years, the 1925 price shown on Bessemer ore is approximately the price that would be in effect were Bessemer ore based on the guaranteed iron content of 55 per cent as are the other Bessemer prices in the table.

Differentials Much Reduced—Lowest Price in Nine Years

The new prices establish a fixed differential of 15c. a ton between Bessemer and non-Bessemer ores, both Mesabi and old range. With the differential that has existed in the iron content of the two grades, there has been a price differential of 75c. between old range Bessemer and non-Bessemer ore, and 65c. between the two grades of Mesabi ore. However, based on 51.50 per cent iron content, the price variation between the two grades has been from 27c. to 48c. Last year there was an actual price differential of 27c. a ton between Mesabi Bessemer and non-Bessemer ore. This difference in price was computed from the base ore price and, of course, varied with different mines. The 1925 price with a fixed 15c. differential means a 12c. a ton cut in the price differential between the two grades of Mesabi ore.

The new prices based on Mesabi non-Bessemer ore bring the schedule to lower levels than any time since 1916 when Mesabi non-Bessemer ore was 3.55c. Conditions resulting from the war started a price advance in 1917 and the peak was reached in 1920 when Mesabi non-Bessemer ore was $6.55. Since that year there has been a continual decline, except in 1923 when prices were advanced 50c. a ton to those that prevailed in 1921. However, in 1924 there was a cut of 80c. a ton and there was considerable talk early this year, when conditions in the iron and steel industry were more active than at present, of restoring the 80c. in the 1925 price.

Bessemer Ore Supply Exceeds Demand

The price differential between Bessemer and non-Bessemer always has been regarded as too high for a long time. Conditions have changed materially since the differential was fixed 18 years ago and the price relation has not taken account of these changes. Sellers in reducing the differential between the two grades have recognized the relation of supply and demand. The demand for non-Bessemer ore has increased materially, while the consumption of Bessemer ore has remained about at a standstill and the Bessemer supply

Prices of Ore and Pig Iron

Prices of Mesabi Non-Bessemer Ore 1915-1925 and Basic Pig Iron in the Valley District in April in the Same Years

	Mesabi Non-Bessemer Ore	Basic Pig Iron
1925	$4.25	$20.50
1924	4.75	21.75
1923	5.55	31.05
1922	5.05	20.00
1921	5.55	22.88
1920	6.55	42.40
1919	5.55	25.75
1918	5.05 to $5.75	32.00
1917	5.05	38.75
1916	3.55	18.13
1915	2.80	12.50

is in excess of the demand which exists at present for it.

Consumers of Bessemer ore have complained that they were handicapped by the higher ore prices in meeting competition with makers of open-hearth steel. Having two differentials of iron content was rather confusing and made it difficult for a consumer to compare the two grades on the basis of the same iron guarantee. Now the prices themselves show the actual differential. Some sales of Bessemer ore in long time contracts have been made on the non-Bessemer basis during the past year or two.

High Phosphorus Ore Cut Less

The demand for high phosphorus foundry ore has increased materially in the past few years and with the change in ownership of ore properties due to consolidations the amount of this grade of ore available for the market has been reduced. Consequently in naming the new prices it was decided not to cut this ore quite as much as non-Bessemer ores. The reduction being only 40c., there is left a differential of 10c. between this grade and Mesabi non-Bessemer.

With the sharp cut in prices it is not expected that there will be any such shading of the regular market quotations this year as was seen last year. No reduction in mining costs is expected and mining companies will have to figure on highest efficiency in operations and narrow margins of profit. It is regarded probable that because of the high costs some mines will be unable to operate with profit under present ore prices.

Wage Reduction Not Expected

No marked reduction in the cost of producing ore can be made without cutting wages and any change in wages is regarded as improbable and was not contemplated in fixing the new prices. Independent mining companies as a rule follow the Steel Corporation in adjusting wage scales. It also seems improbable that there will be any reduction in the vessel rates on ore, as the Lake transportation companies did not have a satisfactory year in 1924 with the ore rates that prevailed. With little likelihood of there being any reduction in mining and transportation costs, some of the leading ore firms are keenly disappointed with the cut in ore prices. Some mines lost money last year with prices 50c. higher than the new base price, and it is expected that some of the higher cost mines that could not make money last year will not operate this year.

Ore Sales in Small Lots

While a number of open market ore sales have been made, they have been mostly in small lots and a brisk buying movement is not looked for. The Ford Motor Co., which inquired for 160,000 tons, is understood to have purchased all or a greater part of this amount. One open market inquiry is pending for 150,000 tons. About the only satisfaction that some of the ore people are getting out of the situation is that they expect the ore movement to be considerably heavier than last year. The present estimates are that shipments will be somewhat over 50,000,000 tons.

Chairman Gary Gives Views on Business

Reads Reports from Subsidiary Companies, Showing Conditions, as a Rule, Improving—Reduction of Wages of Miners Not Probable

JUDGE Elbert H. Gary, chairman United States Steel Corporation, talked to representatives of the press Tuesday afternoon in regard to business conditions. From reports of sales managers of different subsidiaries he read statements as to sales, shipments and prices. The reports were dated April 4.

The Carnegie Steel Co. reported shipments holding up well and more confidence prevailing, with outlook for fair business.

The Illinois Steel Co. reported satisfactory sales and specifications with shipments exceeding expectations and making a new record last month. There were no important deviations in price since February. The National Tube Co. reported the outlook bright, the only unfavorable factor being pessimistic talk among jobbers. The American Steel & Wire Co. reported prices somewhat unsteady. Buyers, realizing that prompt service can be had, are placing orders conservatively. Sales by customers were in good volume, but the company's sales were not very active.

The American Sheet & Tin Plate Co. stated that it could report no improvement in sheets, while in tin plate conditions are favorable. Shipments of tin plate for the first quarter of 1925 were 19 per cent higher than for the same period in 1924.

The Tennessee Coal, Iron & Railroad Co. reported operations at 100 per cent with prospects good. The American Bridge Co. reported keen competition, with prices low and erratic.

The United States Steel Products Co. reported that the reaction from the buying movement on the Pacific Coast, which became evident several weeks ago, still continues, with prices irregular and weak. Improvement in business is, however, expected soon. Business with Mexico is increasing and that with Brazil falling off. Demand from Cuba continues active.

Wages of Iron Ore Miners

In response to a question as to whether wages of ore miners would be reduced as a result of reduction in ore prices, Judge Gary said: "I can answer you only evasively; that is, I can tell you what I think will happen as to our company. I believe it will not reduce wages unless compelled to do so by business conditions. You know it takes more than a little recession in business to compel us to reduce wages."

Judge Gary said that he did not often go to Washington, was not intimately acquainted with any of the high officials, but believed that congressmen, as a rule, are fair-minded and intend to do what is best for the interests of the country. "There is," he said, "much reason to be grateful, especially for the Administration at Washington, which I believe to be the best since that of Lincoln."

Recent Recession in Business

"There has been a considerable recession in the steel business during the past 30 days," said Judge Gary. "It seems to me to be natural, and therefore not surprising. As all well-advised people know, business conditions about a year ago now, or a little later, were very poor in this locality; and that applied to the steel industry. That was, partly at least, because of agitation and disagreements in Congress—disagreements between the different factions and disagreements between the majority and the President. The business public

had a feeling of anxiety and uncertainty concerning the future.

"As it became evident to large numbers, and perhaps the majority, that the approaching National election would be favorable to business, the situation improved. And when finally in November the results were announced, there was a very enthusiastic and somewhat impulsive progression in business activities. Consequently, in some lines at least, the speed was too rapid.

Words of Warning Last Year

"As you will remember, some of us uttered words of warning during the late fall and early winter against inflation of any kind, with the statement that it might result in a sudden and unreasonable check. I think that has happened; and I think also that the present depression, although not great, is more than it need have been if we take into consideration the fundamental conditions of the country and the opportunities for success.

"Then, in addition to that, in some lines, at least, of industry, because of the very prosperous conditions industrialists indulged in rapid increases in producing capacity, so that the purchasing public found by experience that however imperative the demand for products might be it could be promptly supplied and that it was not necessary to buy for a long time in advance of the proposed uses. That has had some effect in producing what I hope is a temporary modification of a disposition to develop, extend and utilize the producing facilities of the country.

Present Bookings

"Our bookings at the present time, all in all, are about three-fifths of our present producing capacity. Conditions, as you see by reports, are now improving to some extent. It is only stating an acknowledged, well recognized fact that the fundamental conditions of this country are the best, all in all, they have been at any time in the business history of this country. I would not undertake to talk to you gentlemen about business which affects all industrial lines. While I try to keep pretty well informed in regard to them, I devote my particular attention to the iron and steel industry, and I think you gentlemen know as much about the general situation as I do, and some of you much more.

"The reason why, in the iron and steel industry just at present, the demand is not better than it is and fully up to the producing capacity, is that the producing capacity of this country is very large, has been rapidly increasing during the last few years and at present is somewhat greater than the demand. That results in competition between the producers being keener, the average manufacturer believing apparently that if he can succeed, by hook or crook—by that I mean by greater energy and lower prices—in securing an order which naturally belongs to a competitor, he has been successful, overlooking the fact that tomorrow or the next day his competitor will do the same thing in regard to his business, and in the long run everyone will average up about the same percentage of business, but at a reduced percentage of profit. The prices at the present time are lower than they ought to be; too low to permit many of the manufacturers to realize a profit. Of course, that is rather unhealthy. That condition ought not to exist.

High Rates for Labor

"The reason why profits are not larger in relation to costs is, in many places and at many works at least, because of the high rates paid for labor. I have nothing to say against high rates for labor. On the contrary, I favor them and always have favored them. For approval of that I would only refer to our record, with which you are thoroughly familiar. The wage rates of labor have to be high compared with the long past, because of the high cost of living. I am not going to discuss that very much, but I deem it appropriate to say that the high costs of living largely result from the high cost of labor in the production of some of the things which the laboring individual has to pay for. For instance: The rates of compensation for many of those who are connected with trades are, to my mind, extortionate. I think the painters, the plasterers, the bricklayers, and generally those who are connected with the construction of improvements, ranging from $10 to $15 or $20 a day, are altogether too large. The causes for that need not be discussed now and would not perhaps be appropriate. It is easy to see, however, that when building is as extensive as it is at the present time in order to take care of the demand for occupation, the rents charged must be so large as to make it burdensome for the average tenant, including the large majority of the working people—unreasonably, if not extortionately, high—and therefore that extra cost for constructing the improvement and to the tenant for occupancy, must be passed along by the one who pays for that rental to his or her employer, whoever or wherever that may be, and that is a tendency to increase the general cost of living. I have only given one illustration. You gentlemen are better able to extend that. Anyhow, you have more time to do it than I have."

In conclusion, he said that if crops are as good as they promise; if there is no special session of Congress, and if when Congress does meet it acts for the best interests of the country; if banks are reasonably conservative and keep rates of interest reasonably low; if there is no epidemic of any kind in business or otherwise, and if business men take advantage of their opportunities, there will be no cause for fear as to prosperity.

Chairman Topping on Steel Outlook

John A. Topping, chairman Republic Iron & Steel Co., at the annual meeting of the company, held April 8, referred to the situation in iron and steel in part as follows:

At present, the iron and steel markets are quiet, although there is a fair volume of business moving, and our plants are operating at about 75 per cent of capacity. The lull in demand is temporary and improvement is near at hand. The farmer, one of our best customers, has not been purchasing his normal wants during recent years, owing to adverse agricultural conditions. An accumulated demand should soon be released, due to the farmer's increased purchasing power. Should average crops be harvested this year, further betterment should be realized. In fact, general demand for iron and steel should show some improvement over last year, as fundamental business conditions have improved.

As to prices, they are low as compared with the first quarter of 1924, but show some improvement as against prices which prevailed during the last quarter of that year. Our cost of production however, has been materially reduced through the introduction of labor-saving devices and improved processes.

As to earnings, no definite statement can be made until our first quarter's report is ready for publication, but enough information is at hand to warrant the statement, that earnings to date are averaging a rate substantially in excess of the average for last year.

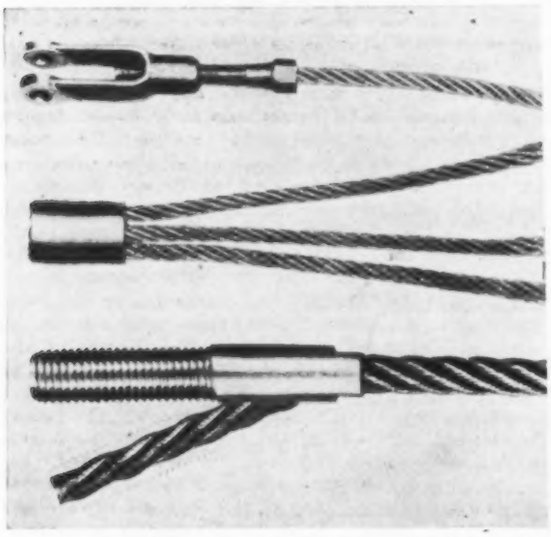
Locomotive Shipments Increase Slightly

WASHINGTON, April 7.—March shipments of railroad locomotives, from the principal manufacturing plants, based on reports received by the Department of Commerce from the individual establishments, totaled 109 locomotives, as compared with 85 in February, and 132 in March, 1924. The table gives the shipments and unfilled orders of locomotives for the first three months of each of the past three years.

	Shipments			Unfilled Orders, End of Month		
	1925	1924	1923	1925	1924	1923
January	90	151	229	407	376	1,788
February	85	99	207	397	499	2,220
March	109	132	282	447	534	2,316
Total	284	382	716			

Wire Rope Made to Resist Unstranding

Wire rope, known as Tru-lay, in which the wires and strands are "preformed" to the exact shape necessary to fit correctly in the completed product, has been placed on the market by the American Cable Co., 105 Hudson Street, New York. An important characteristic claimed for this product, which is available in Lang and regular lays up to 1 in. in diameter, is that it resists unstranding and can be cut for splicing and otherwise handled without the necessity of seizing the ends. Broken wires lie flat and outer wires do not fray out of the rope body. The preformed principle facilitates the splicing and handling of Lang-lay rope, which has advantages over regular lay for certain sheave and drum work.

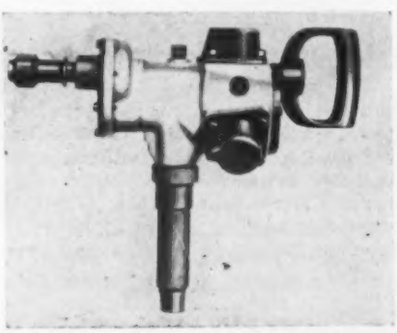


Tru-lay Rope With Threaded Fitting and an Example of a Multiple Tru-loc Fitting Are Shown Above. In the lower view the fitting is split open to show how the metal grips the strands and wires

Special fittings known as Tru-loc and intended to make available practically the entire strength of the new rope have also been developed by the company. These fittings, some uses of which may be noted from the accompanying illustrations, permit the use of turnbuckles, shackles and other equipment used with rods and chains. A steel sleeve is slipped over the unseized end of the rope, and then placed in a special press and made to "flow" down upon the rope until it grips the wire and strands, as shown in the illustration of the split fitting. The sleeves, which may be of various lengths, can be threaded and equipped with heads of various types for wrenches, or furnished with eyes or hooks. The fitting is said to be lighter and less bulky and more dependable because of the greater equalization of load on the wires and strands.

Light Pneumatic Drill for Wood Boring

A reversible pneumatic drill weighing 15 lb. and intended for boring holes up to 1 in. in diameter in wood has been added to the line of the Ingersoll-Rand Co., 11 Broadway, New York.



Portable Electric Drill for Wood Boring Work. Renewable cylinders are a feature. The weight is 15 lb.

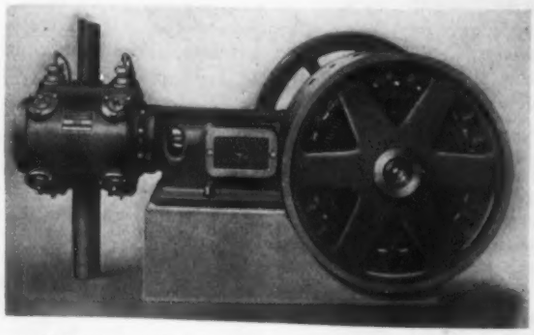
The machine is designated as the size DD and in construction is similar to the company's other three-cylinder drills. Features include a special three-cylinder motor; aluminum case with steel bushings cast in place in all the bearing holes and the throttle hole; renewable crankpin sleeve; and cast-iron cylinders which are interchangeable and may be conveniently removed. The rotating parts of the motor are accurately balanced to eliminate vibration and reduce wear. A spade handle and bit chuck are standard, although a breast plate or feed screw may be substituted, and a drill chuck may be used in place of the bit chuck. The average working speed is 705 r.pm. The length of feed, with feed screw, is 2½ in. The length overall, equipped as illustrated, is 15 in. and the distance from side to center of spindle is 1 9/16 in.

Compressor with Fly-Wheel Type Synchronous Motor Drive

Air compressors driven by direct-connected "fly-wheel type" synchonous motors and available in sizes ranging from 139 to 1000 cu. ft. displacement, for 100 to 125 lb. discharge pressure, have been added to the line of the Chicago Pneumatic Tool Co., 6 East Forty-fourth Street, New York.

The fly-wheel type synchronous motor employed is designed with the rotating element outside of the stator, and with the stator mounted in a support bolted to the compressor frame. The cradle support is bored concentric with the compressor bearing to assure proper alinement of the stator and a uniform air gap when assembled. The rotor has the appearance of the usual flywheel. Its face is crowned to permit of belt driving an exciter or other auxiliary, and on the inner surface of the rim are mounted the poles, which add to the fly-wheel effect.

The air gap in this motor is relatively small, and in order to assure a uniform gap the stator has been designed so that the magnetic pull is upward, relieving the bearings of excessive downward pressure and giving, in effect, a floating rotor. In addition the main bearings of the compressor are fitted with removable bushings which may be conveniently replaced as soon as wear is noticed.



Fly-Wheel Type Synchronous Motor Driven Compressor. Sizes having a displacement ranging from 139 to 1000 cu. ft. are available

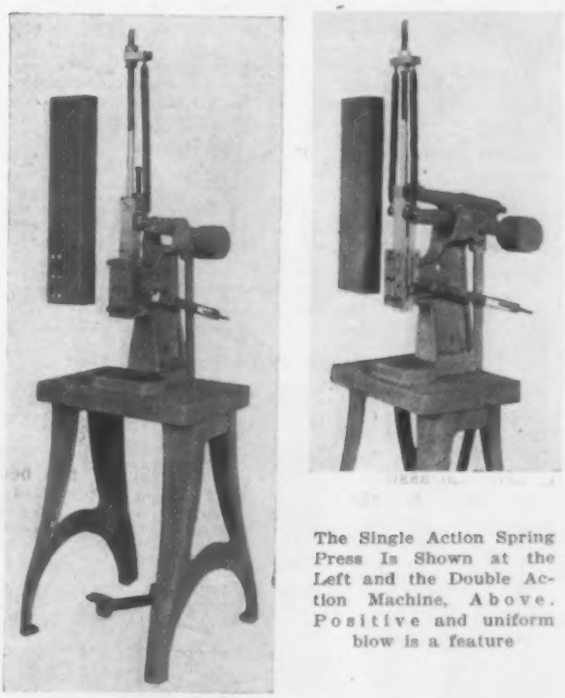
With this construction it is claimed that the weight and the cost of the motor have been reduced; sufficient fly-wheel effect for steady and smooth operation has been obtained, and a uniform, correct air gap has been secured. The floor space occupied is said to be less than if belted to a line shaft and from 30 to 75 per cent less than required for short belt motor drive. The machine is designated as the class N-SE compressor.

According to A. E. Adams, president of the First National Bank, Youngstown, and a director of the Youngstown Sheet & Tube Co., 1925 promises to be a year of fair business at small profits. "We are not yet fully adjusted from the war and postwar expansion," states Mr. Adams, "and until we get to the point where production capacity and consumption are somewhat equally balanced, there will be lulls from time to time such as we are now experiencing."

Uniform Blow Spring Presses

The spring presses shown in the accompanying illustrations have been developed by the Taylor & Fenn Co., Hartford, for increased production in such work as staking, riveting, piercing, stamping, embossing and similar operations. A smaller machine, arranged for bench mounting, is also offered.

These machines differ from the kick press in that the blow delivered is governed entirely by the tension of the spring, a method claimed to provide a positive uniform blow. The blow may be quickly regulated from a few pounds up to 150 lb., and when adjusted for a given blow the machine will continue to strike that blow regardless of variation in the thickness of the work or the effort exerted by the operator. Ease of operation and the elimination of jar at the end of the stroke are features.



The Single Action Spring Press Is Shown at the Left and the Double Action Machine, Above. Positive and uniform blow is a feature

The press shown at the left, designated as No. 1, is of single action type, and although regularly equipped with one 75 lb. spring it may be provided with two springs if desired. It is operated by a movement of the foot treadle, which first adds tension to the spring, then withdraws the latch and releases the ram. The latter is then driven down by a quick contraction of the spring. The force of the blow is governed by the adjustment of the spring tension and by changing the length of stroke. The return movement of the foot treadle, which is counter-balanced, lifts the ram to its initial position, where it is locked in place. The stroke is changed by adjusting the screw in the latch link, and when once adjusted the force of the blow remains constant.

The No. 11 press, shown at the right, is of double-action type. In principle it is similar to the No. 1 machine, but has a sleeve outside the hammer on the end of which is fitted with a hold-down pad. This is for holding two or more pieces together while staking, riveting, embossing and other operations. The pressure is adjustable. The work being covered by the hold-down pad before the ram is released is stressed as providing a safety feature, and it is claimed that on many operations production may be doubled, and as each blow is uniform the necessity for inspection is eliminated. The tools and hold-down pad may be changed conveniently.

In both machines the stroke is adjustable from ⅛ to 3¾ in. The maximum distance bed to ram is 7¼ in. and the depth of throat is 4 in. The working surface of the bed is 5 x 9½ in. and the hole in the bed is 2 in. The net weight of the smaller and larger machines is 410 and 435 lb. net, respectively. The floor space occupied is 24 x 34 in.

The bench machine, designated as the No. 0 uniform blow safety press, is for use in the manufacture of electrical devices, jewelry, cutlery, hardware, etc. The stroke may be set at any length from ⅛ to 2¾ in. The force of the spring regularly furnished is 30 lb., but springs to give from 15 to 50 lb. are available. A hold-down is provided for the work.

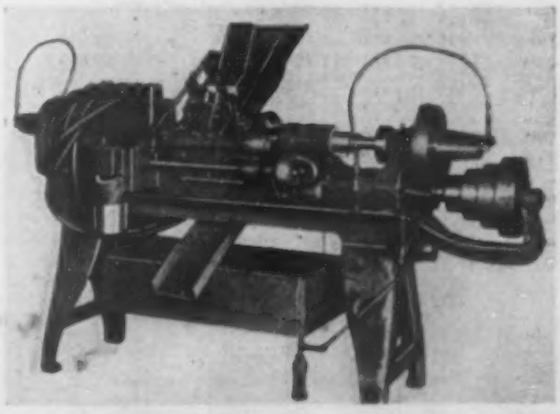
Air-Operated Double-End Threading Machine

Air control is a feature of the double-end machine here illustrated, which is intended for the automatic threading, reaming, chamfering and drilling of pipe nipples, studs, piston pins, bushings and similar work, both ends being machined simultaneously.

The chucking and holding of the work and the movement of the tool-carrying spindles is accomplished by means of air, these operations being actuated by pneumatic cylinders which are controlled by a series of cam-actuated valves. The cams may be adjusted to permit of varying the amount of air admitted and exhausted from the cylinders, which provides flexible control of the speed of the chucks and spindles. The movement of the various parts is under one control and all are geared together. The machine performs all operations automatically and ejects the finished pieces. Feeding of the hopper being all that is required of the operator, one operator can handle two or three machines, which is stressed as materially reducing labor cost.

When the hopper is loaded the pieces roll down a chute, which is adjustable for length and height. Fingers at the bottom of the chute pick up the piece and carry it between the chucks, where it is held until the air cylinders advance the chucks. The tool-spindles then come forward, machine the piece and then reverse. In the meantime another piece has rolled down in the chuck and the fingers pick it up and place it in position for machining. The lengths of movement of the spindles and chucks is determined by air control. By permitting the air to escape from the exhaust side of the cylinder, a cushioning effect for the tools is obtained.

The capacity of the machine which has been placed on the market recently by the Murchey Machine & Tool Co., Detroit, is for work from ⅜ to 2 in. in diameter and 3 to 9 in. long. Threads up to 1 in. long can be cut. The floor space occupied is 22 x 94 in. and the net weight of the machine 2000 lb.



Air-Controlled Double-End Machine for Threading, Reaming, Chamfering and Drilling Operations on Both Ends of Pipe Nipples, Studs and Similar Parts. Operation is entirely automatic

MARCH IRON OUTPUT

Net Loss of 9 Furnaces—10 Shut Down and Only One Blown In

Daily Production Rate Slightly in Excess of February

Final figures for March show that blast furnaces were operating at a very high rate, bringing the daily output slightly above that of February. March production at 114,975 tons per day was only 184 tons larger than the February rate. The net loss of 9 furnaces, most of them shut down in the last week, indicates a slowing down of operations.

The production of coke pig iron for the 31 days in March amounted to 3,564,247 gross tons, or 114,975 tons per day, as compared with 3,214,143 tons, or 114,791 tons per day, for the 28 days of February. The March daily rate is the largest since the war.

There were 10 furnaces blown out or banked and only one blown in, bringing the number of furnaces active on April 1 to 245. The estimated daily capacity of these 245 stacks on April 1 was 112,380 tons, compared with 115,700 tons per day for the 254 furnaces active on March 1.

Furnaces In and Out

During the month of March only one furnace was blown in, No. 3 River furnace of the McKinney Steel Co. in northern Ohio.

Among the furnaces blown out or banked during March were the following: Nos. 3 and 4 Susquehanna furnaces in the Buffalo district, New York; No. 2 Swede furnace in the Schuylkill Valley; one Carrie furnace of the Carnegie Steel Co. in the Pittsburgh district; Tod furnace of the Youngstown Sheet & Tube Co. and No. 3 Haselton furnace of the Republic Iron & Steel Co. in the Mahoning Valley; one Central furnace of the American Steel & Wire Co. in northern Ohio; No. 1 Joliet furnace of the Illinois Steel Co. in the Chicago district and No. 2 Bessemer furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama.

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1919—Gross Tons

	1919	1920	1921	1922	1923	1924	1925
Jan.	106,525	97,264	77,945	53,063	104,181	97,384	108,720
Feb.	105,006	102,720	69,187	58,214	106,935	106,026	114,791
Mar.	99,685	108,900	51,468	65,675	113,673	111,809	114,975
Apr.	82,607	91,327	39,768	69,070	118,324	107,781	.....
May	68,002	96,312	39,394	74,409	124,764	84,258	.....
June	70,495	101,451	35,494	78,701	122,548	67,541	.....
July	78,340	98,931	27,889	77,592	118,656	57,577	.....
Aug.	88,496	101,529	30,780	58,586	111,274	60,875	.....
Sept.	82,932	104,310	32,850	67,791	104,184	68,442	.....
Oct.	60,115	106,212	40,215	85,092	101,586	79,907	.....
Nov.	79,745	97,830	47,183	94,990	96,476	83,656	.....
Dec.	84,944	87,222	53,196	99,577	94,225	95,539	.....
Year	83,789	99,492	45,325	73,645	109,713	85,075	.....

Production of Steel Companies—Gross Tons

	Total Production†		Spiegeleisen and Ferromanganese*			
			1924		1925	
	1924	1925	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	2,274,005	2,692,537	20,735	7,948	23,578	5,418
Feb.	2,410,658	2,539,785	22,405	9,870	18,184	4,910
Mar.	2,674,565	2,812,995	22,351	13,796	20,062	5,449
Apr.	2,463,027	.....	23,580	4,240	.....	.....
May	1,927,461	.....	14,993	9,336	.....	.....
June	1,507,110	.....	20,049	9,405	.....	.....
½ year	13,256,826	.....	124,113	54,595	.....	.....
July	1,343,952	.....	14,367	15,328	.....	.....
Aug.	1,413,314	.....	10,718	8,010	.....	.....
Sept.	1,509,360	.....	13,263	5,033	.....	.....
Oct.	1,858,502	.....	7,780	10,047	.....	.....
Nov.	1,896,886	.....	13,448	8,835	.....	.....
Dec.	2,377,141	.....	21,220	5,284	.....	.....
Year	23,656,981	.....	204,909	107,132	.....	.....

*Includes output of merchant furnaces.
†Ferromanganese and Spiegeleisen included.

Capacity Active on April 1 and March 1 and Total Number of Coke Blast Furnaces

Location of Furnaces	Total Stacks	April 1 — In Blast	April 1 — Capacity per Day	March 1 — In Blast	March 1 — Capacity per Day
New York:					
Buffalo	22	14	6,290	16	6,935
Other New York	5	1	535	1	455
New Jersey	4	0	.....	0	.....
Pennsylvania:					
Lehigh Valley	12	6	2,455	6	2,420
Spiegel	2	1	175	1	175
Schuylkill Valley	15	7	2,520	8	2,930
Lower Susquehanna	9	3	1,200	3	1,045
Ferromanganese	1	1	70	1	60
Lebanon Valley	4	1	215	1	200
Ferromanganese	2	0	.....	0	.....
Pittsburgh District	55	48	24,180	49	24,980
Ferro and spiegel	4	2	360	2	370
Shenango Valley	17	12	5,260	12	5,070
Western Pa.	21	11	4,850	11	4,650
Ferro and spiegel	2	0	.....	0	.....
Maryland	5	5	2,165	5	2,215
Ferromanganese	1	1	100	1	110
Wheeling District	14	10	4,590	10	4,500
Ohio:					
Mahoning Valley	28	20	10,650	22	11,310
Central and Northern	25	18	10,180	18	10,430
Southern	14	4	1,280	4	1,270
Illinois and Indiana	42	38	21,800	39	22,350
Mich., Wis. and Minn.	12	7	2,930	8	3,050
Colo., Mo. and Utah	6	3	1,260	3	1,210
The South:					
Virginia	17	2	340	2	330
Ferromanganese	1	1	85	1	80
Kentucky	7	2	700	2	525
Alabama	39	24	7,875	25	8,725
Ferromanganese	1	1	95	1	85
Tennessee	14	2	220	2	220
Total	401	245	112,380	254	115,700

Pig Iron Production by Districts, Gross Tons

	March (31 days)	Feb. (28 days)	Jan. (31 days)	Dec. (31 days)
New York	217,038	207,012	205,203	182,742
New Jersey	.....	.....	.....	.....
Lehigh Valley	81,610	72,616	79,155	78,909
Schuylkill Valley	86,622	82,104	88,522	70,843
Lower Susquehanna and Lebanon Valleys	46,580	36,609	40,816	39,761
Pittsburgh district	785,487	709,709	754,675	638,237
Shenango Valley	163,222	142,088	160,128	120,803
Western Pa.	150,571	130,175	143,502	140,027
Maryland, Virginia and Kentucky	102,205	76,978	81,614	84,349
Wheeling district	142,323	136,237	141,546	120,185
Mahoning Valley	339,160	316,679	329,757	300,629
Central and Northern Ohio	315,802	292,109	318,872	298,951
Southern Ohio	39,804	42,601	46,722	37,326
Illinois and Indiana	703,000	622,987	620,574	502,805
Mich., Minn., Mo., Wis., Colo. and Utah	130,128	115,315	120,892	108,717
Alabama	253,820	224,679	231,465	230,760
Tennessee	6,875	6,245	6,883	6,658
Total	3,564,247	3,214,143	3,370,336	2,961,702

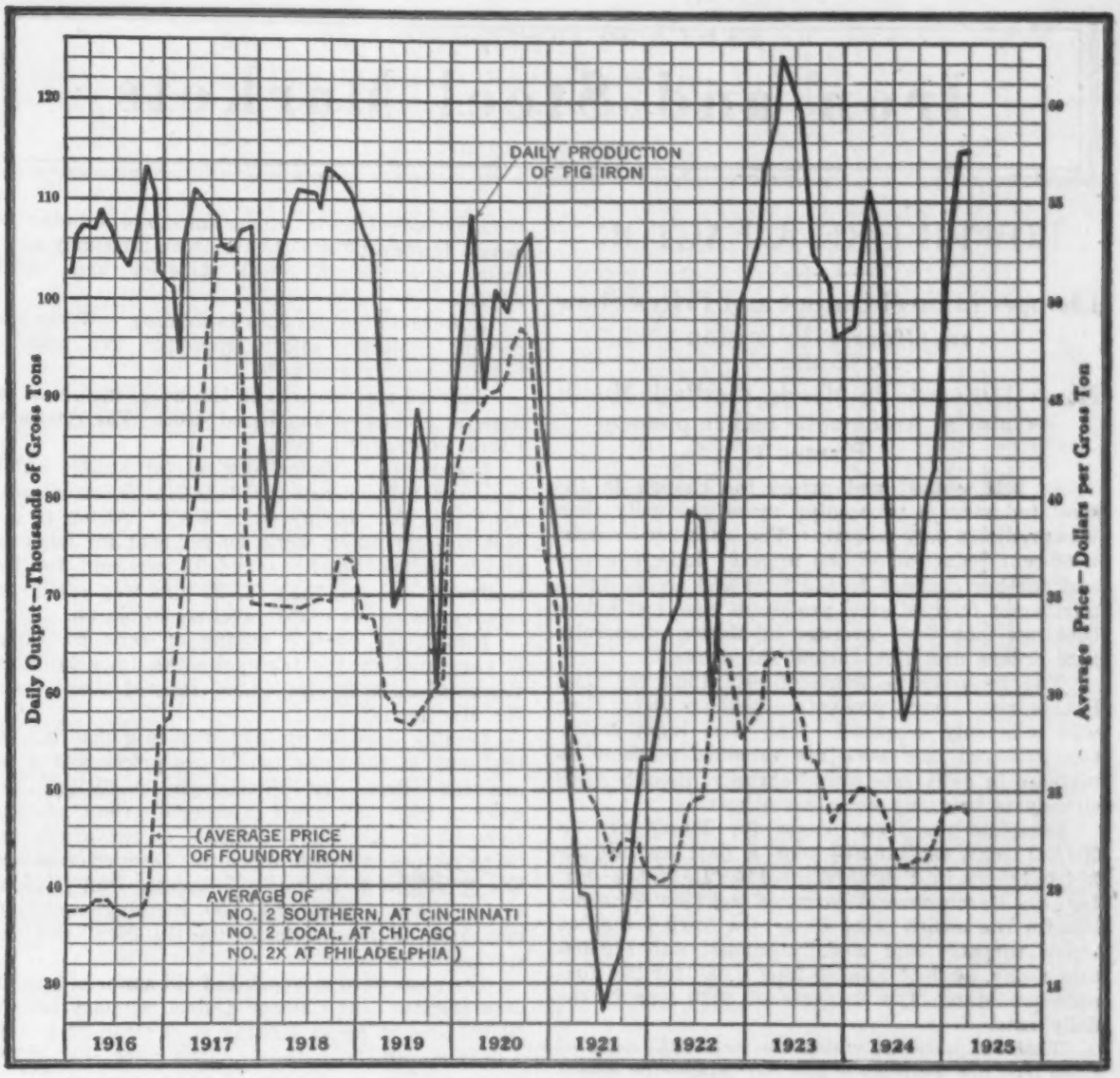
Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1921—Gross Tons

	1921	1922	1923	1924	1925
Jan.	2,416,292	1,644,951	3,229,604	3,018,890	3,370,336
Feb.	1,937,257	1,629,991	2,994,187	3,074,757	3,214,143
Mar.	1,595,522	2,035,920	3,523,868	3,466,086	3,564,247
Apr.	1,193,041	2,072,114	3,549,736	3,233,428	.....
May	1,221,221	2,306,679	3,867,694	2,615,110	.....
June	1,064,833	2,361,028	3,676,445	2,026,221	.....
½ year	9,428,166	12,050,683	20,841,534	17,434,492	.....
July	864,555	2,405,365	3,678,334	1,784,899	.....
Aug.	954,193	1,816,170	3,449,493	1,887,145	.....
Sept.	985,529	2,033,720	3,125,512	2,053,264	.....
Oct.	1,246,676	2,637,844	3,149,158	2,477,127	.....
Nov.	1,415,481	2,849,703	2,894,295	2,509,673	.....
Dec.	1,649,086	3,086,898	2,920,982	2,961,702	.....
Year*	16,543,686	26,880,383	40,059,308	31,108,302	.....

*These totals do not include charcoal pig iron. The 1924 production of this iron was 212,710 tons.

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
March, 1924	86,276	25,533	111,809
April	82,101	25,680	107,781
May	62,176	22,182	84,358
June	50,237	17,304	67,541
July	43,353	14,224	57,577
August	45,591	15,284	60,875
September	50,312	18,130	68,442
October	59,952	19,955	79,907
November	63,230	20,426	83,656
December	76,682	18,857	95,539
January, 1925	86,856	21,864	108,720
February	90,707	24,084	114,791
March	90,741	24,234	114,975



Pig Iron Production a Little Higher in March Than in February; the Price a Little Lower

THEORETICAL needs of the country in pig iron, about 97,950 tons per day in January, 1924, increased to 100,475 tons in March, 1925. Actual production was deficient or in excess as shown by the length of the bars on either side of the vertical line. A bar length of 1 in. is equivalent to 25,000 tons.

February needs, 100,295 tons a day; production, 114,791; excess of production, 14,496.
March need, 100,475 tons a day; production, 114,975; excess of production, 14,500.

Slight Increase in Operations in the Mahoning Valley

YOUNGSTOWN, April 7.—Operating schedules of iron and steel properties in the Mahoning Valley show moderate acceleration this week. The Republic Iron & Steel Co. and the Sharon Steel Hoop Co. have each added an open-hearth furnace, for a total of 52 active units, of the 67 independent and Steel Corporation open hearths in the district. All four Bessemer plants in this area are in action, but at a retarded rate. Average steel ingot output is around 80 per cent.

In the Valley, 18 of 22 blast furnaces operated by steel-making interests are in action, and little or no iron is being accumulated, the situation indicating consumption of hot metal at a rate about equal to production.

Schedules show a gain of two sheet mills, from 87 to 89 active units. There is little deviation in the production rate of other finishing departments of the primary industry. The Republic company is operating three light bar mills against five last week.

Under pressure of increasing spring demand for deliveries, production of fabricators, such as the Truscon Steel Co., General Fireproofing Co. and Youngstown Pressed Steel Co., is approaching normal.

In the Chicago district, the Youngstown Sheet & Tube Co. is operating six of nine blast furnaces. One of the idle stacks is an obsolete unit which will likely never be operated again.

Iron and Steel Markets

LOWER ORE A FACTOR

Changes in Steel Output and Prices Show an Orderly Recession

Heavy Deliveries in March, the Peak Month —Gains at Automobile and Implement Plants

In both output and prices the change in the steel industry is proceeding more gradually than was predicted only recently. The week has brought a 50-cent reduction in the price of Lake iron ore and further declines in pig iron and scrap, but a number of finished steel producers have had better bookings than their average in March. Generally new orders are quite below shipments.

The recession is more orderly thus far than last year's. March production held up better than was commonly supposed. The steel ingot statistics gathered this week are expected to show an increase in daily rate over February, though April already is bringing some curtailment.

Complete pig iron figures for March are 3,564,247 tons, or 114,975 tons a day, against 3,214,143 tons in February, or 114,791 tons a day. Late in March several furnaces went out, the net loss for the month being nine. On April 1 the 245 active furnaces had a daily capacity of 112,380 tons a day, against 115,700 tons a day for 254 furnaces on March 1, a decrease of 3320 tons in the daily rate.

The low prices at which the first 1925 sales of Lake iron ore were made last Saturday—the lowest since 1916—were a surprise outside the ore trade itself. Non-Bessemer ores went at $4.25 for Mesabi ore, a 50-cent reduction from the 1924 price, which was 80c. below that of 1923. Bessemer ores will sell at 61c. to 71c. less than last year's basis.

The Ford Motor Co. has bought most of the 160,000 tons of ore it asked for, and one 150,000-ton inquiry is pending, but a brisk buying movement is not expected.

High cost Lake Superior mines will not be run this year. Reduction of miners' wages is not now expected. The Steel Corporation plans no cut, and its policy on wages is generally followed by merchant iron mines.

In finished steel the size of stocks in consumers' and jobbers' hands is the factor of most immediate influence. The heavy deliveries of March, all the large producers in the Chicago district making new high records in output and shipments, point to an interval of digestion just ahead.

Meanwhile, the tendency of prices continues in buyers' favor. One item of the past week is the extension of the 2c. bar price by some producers, on deliveries carried over from first quarter into the second quarter. In the Cleveland district the weakening of plates to a definite basis of 2c. is reported.

New business in wire products has fallen off in view of the stocks accumulated at the prices of the last quarter of 1924. The New York Central Lines bought largely of wire nails at $2.75.

Tractor and farm implement manufacturers have increased their production in a number of cases. Implement exports are on an unusually large scale, especially to South America and South Africa.

Automobile output also is gaining and two important producers, apart from the two leaders, have broken their records.

Railroad cars ordered in the week, including industrial purchases, numbered 4200. The Southern Pacific contributed 3400.

Bookings of fabricated steel for sizable buildings and bridges call for 21,000 tons, or slightly more than for the preceding week. About 40 per cent was for public work, 30 per cent for business and industrial buildings and 12 per cent for the railroads. No less than 42,000 tons was put under inquiry, twice the weekly average in March.

Diminished outside buying of rails by Japan is suggested by the taking by the Imperial Steel Works of an order for 16,000 tons of 100-lb. rails for Manchuria.

Coming upon an already weak pig iron market the news of the reduction of ore prices had a depressing effect. At Pittsburgh quotations are down at least 50c., while in other districts, particularly Philadelphia and Chicago, recent prices are being maintained with difficulty. Decided weakness has developed at Buffalo. Tennessee iron is being sold freely on a basis of $18.50, Birmingham. German iron is now a factor in the New England market.

The downward movement of old material has not been checked. At Chicago a steel company bought 20,000 tons of heavy melting steel scrap at $15.50, a drop of 50c. from the previous price. At Pittsburgh as low as $17 was done, as against $22.50 at the first of the year.

For the second time Detroit has rejected all bids covering 13,000 tons of cast iron pipe, on 7000 tons of which French prices were lowest.

Pig iron has fallen to $21.29 from $21.54 last week, according to THE IRON AGE composite price. This is $1.30 below the level of one year ago, but $2 above that of early November.

Pittsburgh

Readjustment Proceeding in an Orderly Way —Pig Iron Reduced

PITTSBURGH, April 7.—The retreat in the steel market from its position early in the year of activity and strength continues, but on all sides it is admitted to be a very orderly one. With the exception of sheets, in which there is a continued anxiety on the part of producers for business, decreasing demand is not accompanied by very frequent application of the knife to prices and it is a report by several producers that incoming business in the past week has gained appreciably as compared with the two preceding weeks. In wire products alone is the report of an actual loss in business and that is not surprising in view of the fact that the shipments over the past three months have been extremely heavy and the spring has not progressed far enough for the really good movement into consumption to begin.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Apr. 7, 1925	Mar. 31, 1925	Mar. 10, 1925	Apr. 8, 1924
No. 2X, Philadelphia‡	$23.26	$23.26	$24.26	$23.26
No. 2, Valley Furnace†	*20.50*	21.00	21.00	22.00
No. 2, Southern, Cin'ti†	24.05	24.05	24.05	26.55
No. 2, Birmingham, Ala.†	20.00	20.00	20.00	22.50
No. 2 foundry, Chicago*	23.00	23.00	24.00	24.50
Basic, del'd, eastern Pa.	22.75	22.75	23.75	21.50
Basic, Valley furnace*	*20.50*	21.00	21.50	21.75
Valley Bessemer del. P'gh.	*23.26*	23.76	24.26	24.76
Malleable, Chicago*	23.00	23.00	24.00	24.50
Malleable, Valley	*21.00*	21.50	21.50	22.50
Gray forge, Pittsburgh	*21.76*	22.26	22.26	23.76
L. S. charcoal, Chicago	29.04	29.04	29.04	29.15
Ferromanganese, furnace	115.00	115.00	115.00	107.50
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	35.50	35.50	37.00	40.00
O.-h. billets, Pittsburgh	35.50	35.50	38.00	40.00
O.-h. sheet bars, P'gh	37.00	37.00	38.00	42.50
Forging billets, base, P'gh.	41.00	41.00	42.50	45.00
O.-h. billets, Phila	41.67	41.67	41.67	45.17
Wire rods, Pittsburgh	48.00	48.00	48.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	*2.00*	2.10	2.10	2.30
Light rails at mill	1.80	1.80	1.80	2.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.28	2.28	2.28	2.52
Iron bars, Chicago	2.10	2.10	2.10	2.35
Steel bars, Pittsburgh	2.10	2.10	2.10	2.30
Steel bars, Chicago	2.20	2.20	2.20	2.40
Steel bars, New York	2.44	2.44	2.44	2.64
Tank plates, Pittsburgh	2.00	2.00	2.00	2.30
Tank plates, Chicago	2.30	2.30	2.30	2.50
Tank plates, New York	2.34	2.34	2.34	2.54
Beams, Pittsburgh	2.10	2.10	2.10	2.30
Beams, Chicago	2.30	2.30	2.30	2.50
Beams, New York	2.34	2.34	2.44	2.59
Steel hoops, Pittsburgh	2.40	2.40	2.40	2.90

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Apr. 7, 1925	Mar. 31, 1925	Mar. 10, 1925	Apr. 8, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.40	3.40	3.50	3.75
Sheets, black, No. 28, Chicago dist. mill	3.60	3.60	3.70	...
Sheets, galv., No. 28, P'gh.	4.50	4.50	4.65	4.90
Sheets, galv., No. 28, Chicago dist. mill	4.70	4.70	4.85	...
Sheets, blue, 9 & 10, P'gh.	*2.60*	2.65	2.70	2.85
Sheets, blue, 9 & 10, Chicago dist. mill	2.70	2.70	2.80	...
Wire nails, Pittsburgh	2.85	2.85	2.85	3.00
Wire nails, Chicago dist. mill	2.95	2.95	2.95	...
Plain wire, Pittsburgh	2.60	2.60	2.60	2.75
Plain wire, Chicago dist. mill	2.70	2.70	2.70	...
Barbed wire, galv., P'gh.	3.55	3.55	3.55	3.80
Barbed wire, galv., Chicago dist. mill	3.65	3.65	3.65	...
Tin plate, 100 lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$16.00	$16.00	$17.50	$17.00
Carwheels, Philadelphia	18.00	18.00	18.50	17.50
Heavy steel scrap, P'gh.	*17.50*	18.00	18.50	17.00
Heavy steel scrap, Phila.	*15.00*	15.50	16.00	15.50
Heavy steel scrap, Ch'go.	*15.00*	15.50	17.00	14.50
No. 1 cast, Pittsburgh	18.00	18.00	19.00	19.00
No. 1 cast, Philadelphia	*17.50*	18.00	18.00	18.00
No. 1 cast, Ch'go (net ton)	17.50	17.50	18.50	18.50
No. 1 RR. wrot, Phila.	*18.00*	18.50	19.00	18.50
No. 1 RR. wrot. Ch'go (net)	*13.00*	13.50	15.00	13.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	*$3.15*	$3.25	$3.50	$3.75
Foundry coke, prompt	4.00	4.00	4.25	4.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.75	13.75	14.62½	13.75
Electrolytic copper, refinery	*13.37½*	13.25	14.25	13.25
Zinc, St. Louis	*7.10*	7.00	7.35	6.30
Zinc, New York	*7.45*	7.35	7.70	6.65
Lead, St. Louis	*7.87½*	8.12½	8.75	8.25
Lead, New York	*8.20*	8.45	9.00	8.50
Tin (Straits), New York	*51.50*	53.37½	53.37½	51.00
Antimony (Asiatic), N. Y.	*13.75*	14.00	16.00	10.25

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

April 7, 1925, Finished Steel, 2.531c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 85 per cent of the United States output of finished steel.

March 31, 1925,	2.531c.
March 10, 1925,	2.546c.
April 8, 1924,	2.703c.
10-year pre-war average,	1.689c.

April 7, 1925, Pig Iron, $21.29 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

March 31, 1925,	$21.54
March 10, 1925,	22.13
April 8, 1924,	22.59
10-year pre-war average,	15.72

	High				Low		
	1923	1924	1925		1925	1924	1923
Finished Steel	2.824c., April 24	2.789c., Jan. 15	2.560c., Jan. 6		2.531c., March 17	2.460c., Oct. 14	2.446c., Jan. 2
Pig Iron	$30.86, March 20	$22.88, Feb. 26	$22.50, Jan. 13		$21.29, April 7	$19.21, Nov. 3	$20.77, Nov. 20

Plainly the steel market is in a digestive period and until the stocks of steel in second hands are reduced to some extent, the possibilities are poor for a fresh buying movement of any considerable proportions. This prospect now is finding reflection in plant operations. The general average of ingot production in this and nearby districts now is not more than 80 per cent of capacity and is probably slightly below despite the fact that the Carnegie Steel Co. still is producing at about 85 per cent of capacity. The Jones & Laughlin Steel Corporation has banked one of its Eliza furnaces and the Carnegie Steel Co. has taken off a furnace at New Castle, Pa. As compared with a month ago, there are seven fewer furnaces in production in this and nearby districts and the losses have all been steel works units.

While steel prices generally are steady, particularly on business within the Pittsburgh district, this is partly explained by the fact that few, if any, large and attractive inquiries are being presented. The steel situation is getting no support from the primary materials market, for the week's developments include a reduction of 50c. to 71c. a ton in iron ore prices, when the recent expectation had been that at least the prices of 1924 would be continued, and some suggestions were made at the beginning of the year that an advance was likely. A cut in pig iron prices of 50c. a ton on all grades is partly ascribable to this reduction in ore

prices and there is a fear that since the cut on non-Bessemer ores is roughly equivalent to $1 a ton in the cost of making pig iron, consumers may use the argument for still lower pig iron prices.

Rather heavy curtailment of coal production in western Pennsylvania and southern Ohio has yet to bring about any change in the supply or price situation and coke has actually grown weaker in price since a week ago. In the scrap market, there have been sales of heavy melting steel as low as $17 which compares with $22.50 around the first of the year.

Pig Iron.—Prices are down 50c. a ton on all grades from last week's levels, but as business still is very slack and the price concessions do not seem to be stimulating the demand, quotations still must be regarded as nominal. There has been a little more pressure to sell iron lately than had been previously noted, but there are few consumers who need supplies badly enough to be interested in the market and sales continue to run largely in small lots. One sale of 500 tons of Bessemer iron is noted at $21.50, Valley furnace, and a few smaller sales of the same grade went at the sale figure. Basic iron is offered at $20.50, Valley furnace, without takers, and while some producers still are quoting foundry iron at $21, Valley furnace, for the base grade, sales are becoming difficult at that figure, because iron in the hands of middlemen is being offered at $20.50. Malleable grade has settled to $21, Valley furnace, on small sales. Sharp competition is reported on an inquiry for 1000 tons of foundry iron recently made by a Titusville, Pa., melter. Freight from the Valley and Erie to this point is the same and on some occasions Buffalo furnaces ship there. The cut in ore prices is not especially welcome to the merchant producers, who have rather large stocks of iron made from higher costing ore and now see one of the props to the market broken down. Cheap coke and cheap ore provide buyers with a pretty strong price argument. There has been a change in the plans of the Reliance Coke & Furnace Co. and its Claire furnace will be continued in blast.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$20.50
Bessemer	21.50
Gray forge	$20.00 to 20.50
No. 2 foundry	20.50 to 21.00
No. 3 foundry	20.00 to 20.50
Malleable	21.00
Low phosphorus, copper free	28.50

Ferroalloys.—Specifications are steady against old contracts, but there is almost no new business. The report persists that British producers of ferromanganese are considering a cut in prices, although the report has been denied by cable and agents here say they have not been advised of a change from $115, c.i.f. Atlantic seaboard, duty paid. Prices are given on page 1089.

Semi-Finished Steel.—Action of Youngstown and northern Ohio producers of sheet bars, slabs and billets in continuing first quarter prices on second quarter business has been followed by Pittsburgh district producers, although with a show of reluctance on the basis that costs are higher. The Carnegie Steel Co. disclaims having made a second quarter sheet bar price, but it has steel to spare to only a few customers outside of its associated company, the American Sheet & Tin Plate Co., and they are supplied on scale contracts. Neither sheets nor strips are selling with enough urgency to cause nonintegrated producers much uneasiness about supplies, especially as most of them have fair-sized stocks or much tonnage due them on first quarter tonnages. Wire rods still are priced at $48, base, Pittsburgh or Cleveland, against first quarter contract prices of $45 to $46; the second advance in wire products of $2 a ton failed to hold and few makers of rods made the second advance, which would have meant $50, base, Pittsburgh or Cleveland. Skelp is being priced in contracts at 2c. Leading local producers have eased down in production in the past week and the general average of this and nearby district is now about 80 per cent; recently, it was around 83 per cent. Prices are given on page 1089.

Rails and Track Supplies.—Local spikes prices have definitely settled back to $2.80, base, per 100 lb. for large and $3.10 for small railroad spikes. Fair demand is noted for large spikes, with the Southern Pacific Co. about to close on 18,000 to 20,000 kegs. There is almost no demand for small spikes. The Baltimore & Ohio Railroad opened bids April 6 on 400,000 tie plates. Light rails are still very slow of sale and $36 per net ton, or $40 per gross ton, now is the top price and probably would be shaded on an order of any size. Prices are given on page 1088.

Tubular Goods.—Demand for pipe has the virtue of steadiness, and while makers are not accumulating backlogs, at least they are able to maintain a reasonably high rate of production without adding very much to mill stocks. About 80 per cent of the steel pipe capacity of this and nearby districts is engaged. Prices are steady at the levels established more than two years ago and give no sign of a change either way. Boiler tube business is fairly good, but the starting up a short time ago by the leading producers of two lap-weld boiler tube furnaces is now explained as having been due to the fact that the practice of shipping seamless tubes against either seamless or lap-welded orders resulted in putting back deliveries. Delivery promises were helped by putting on these furnaces. Makers of seamless goods see greater possibilities in the future in oil well casing than in boiler tubes and developments are in the direction of mills capable of producing larger diameter tubes. Discounts are given on page 1088.

Sheets.—There is a demand for automobile body sheets, with some consumers sending in orders by telegraph to meet unexpected requirements. There is also much steadiness in prices of this grade. But conditions still are almost the reverse in the common ordinary finishes, in which the desire for orders is much more apparent than the desire for supplies. The industry produced pretty heavily from December to February, inclusive, with actual production running more than 10 per cent above mechanical operation. This meant some accumulation at the mills and also a reduction of costs; both items have been factors in the recent weakness of the market, because those who had to sell could pass along some of the savings in production costs. Prices are given on page 1088.

Tin Plate.—There is a steady, free movement of tin plate on contracts, but no great amount of new business. This quarter will give a line on the crops and the probable pack, as well as the probable consumption of tin plate. The common idea that the pack will be heavy this year in all perishable foods and that the can makers will need all the tin plate they have ordered for the first half of this year. The price situation is without change. The American Sheet & Tin Plate Co. has found it necessary to transfer some business from its Western to Eastern district mills; the effort has been to confine such transfers to business involving the least amount of freight absorption, because to ship from Pittsburgh to points west of Chicago would mean using Gary as a base for price and freight.

Cold-Finished Steel Bars and Shafting.—Incoming business to makers here is running well up to shipments, but orders from consumers for the most part represent belated specifications against first quarter business and order books are not mounting with any rapidity. The encouraging feature of the situation continues to be the fact that the trade is not confronted with the suspensions and cancellations common at this time last year, when the automotive industry discovered its mistake in producing too far in advance of actual orders for cars. A report has been current that the Ford Motor Co. bought its cold-finished steel bars at 2.40c., base, which would be $6 a ton below what is regarded as the regular market price and for that reason is doubted.

Steel and Iron Bars.—All makers of steel bars have set up an extra of $2 per ton for steel bars of screw stock analysis. Almost two years ago, an extra of $3 a ton for bars of this analysis was established, but its application has been rather irregular over the past

12 months, chiefly because of the poor business done by makers of cold-finished steel bars over the last nine months of last year. There is a steady demand for steel bars and it is claimed that there are no sales below 2.10c., base Pittsburgh. Iron bars are holding at recent prices, but demand is only fair. Prices are given on page 1088.

Structural Material.—Shipments still are gaining on new business, but mills in this district are not yet badly enough in need of fresh orders to be willing to go below the recent price of 2.10c., Pittsburgh. The tendency is to let lower priced business in the East go to Eastern mills. Inquiry for fabricated steel is reported to be good, but actual awards are rather light. Plain material prices are given on page 1088.

Plates.—Open capacity is somewhat heavier than it was recently because mills that make a number of products and did not have steel for the production of plates on account of a good demand for other lines now seem to have steel. The leading producer is holding plates at 2.10c., Pittsburgh, but they are available at less from some of the independent mills. Prices are given on page 1088.

Wire Products.—There has been a distinct falling away in incoming business in the past week with all makers and there seems to be a little more competition among producers for new orders. The New York Central Lines was able to buy a large tonnage of wire nails at $2.75, base per keg, Pittsburgh, but the quotations against this inquiry disclosed a few mills still quoting $2.95 and others $2.85. The market here is regarded as $2.85 for nails and $2.60 for plain wire. Prices are given on page 1088.

Hot-Rolled Flats.—Considerable room for improvement in business still exists, but prices are well maintained. Material narrower than 6 in. is holding well at 2.40c., base Pittsburgh, and makers say that it has not been necessary to go below 2.20c. base on wider stock. Prices are given on page 1088.

Cold-Rolled Strips.—Business could be better but there is very little inclination on the part of makers to help it at the expense of prices. It is claimed that at 4c., base Pittsburgh, profits are reduced to the vanishing point and consequently there is no shading of that figure by Pittsburgh district mills.

Bolts, Nuts and Rivets.—There is a steady run of orders for bolts and nuts, but they run to small quantities and reflect a tendency on the part of jobbers and consumers not to become overstocked. Prices are steady. Large rivets are moving on contracts at full quotations, but orders for early delivery, especially when of good sized proportions, can be placed at concessions. Makers of cap and set screws are talking higher prices on the basis of higher prices for raw material. Prices and discounts are given on page 1089.

Coke and Coal.—The general situation still contains little of an encouraging character to producers. The attempt to shut down the non-union mines in northern West Virginia by the United Mine Workers of America in a drive to unionize that district appears to have been a failure and the wage reduction in the Connellsville district has been applied by all companies except the H. C. Frick Coke Co. without resistance on the part of the men. A good deal of curtailment of coal production has failed to narrow the gap between supply and demand and prices are still soft. The coke market also is easy because there is an ample supply for all requirements. Spot furnace coke is readily obtainable at $3.25 per net ton at ovens, and has sold as low as $3.15. Spot foundry coke is plentiful at $4 to $4.50 per net ton at ovens.

Old Material.—The scrap market still is weak, with very little demand from consumers and dealers inclined to hold off in the fear of not being able to turn over profitably what they might take on, since prices are not yet at a level that is considered safe for yard purchases. Heavy melting steel has sold as low as $17, delivered, to a Pittsburgh district steel maker, ordinarily exacting as to specifications. The full range on this grade is $17 to $18; for some points in the district material good enough to pass inspection cannot be secured cheaply enough to be sold even without profit at $18. Such points take only No. 1 railroad steel or its equivalent in industrial scrap, which usually means new material, such as bar and structural croppings. On the general run of offerings $17 is the prevailing price, but for material ¼ in. and heavier, 18 in. and under in width and 5 ft. and under in length, there are no offerings under $18. Compressed sheets have weakened to the extent of about 75c. per ton, but users of machine shop turnings, recently bidding $13, have in the past week paid 50c. to $1 more. Heavy steel scrap in the April Pennsylvania Railroad list sold at $17.50 to $18.25 per gross ton delivered, the higher price being for delivery in the Canton, Ohio, district.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$17.00 to $18.00
No. 1 cast, cupola size	18.00 to 18.50
Rail for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	18.50 to 19.00
Compressed sheet steel	16.00 to 16.50
Bundled sheets, sides and ends	15.00 to 15.50
Railroad knuckles and couplers	20.00 to 20.50
Railroad coil and leaf springs	20.00 to 20.50
Low phosphorus blooms and billet ends	22.50 to 23.00
Low phosphorus plate and other material	20.50 to 21.00
Railroad malleable	17.50 to 18.00
Steel car axles	21.00 to 21.50
Cast iron wheels	18.00 to 18.50
Rolled steel wheels	20.00 to 20.50
Machine shop turnings	13.50 to 14.00
Short shoveling turnings	13.50 to 14.00
Sheet bar crops	20.00 to 20.50
Heavy steel axle turnings	17.50 to 18.00
Short mixed borings and turnings	13.50 to 14.00
Heavy breakable cast	15.00 to 15.50
Stove plate	14.50 to 15.00
Cast iron borings	13.50 to 14.00
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	18.00 to 18.50

Eastern Pig Iron Association Will Probably Disband

The Eastern Pig Iron Association, which has been in existence for 30 years, will probably disband as a result of action taken Friday, April 3, at the monthly meeting held at the office of Pilling & Co., Bankers' Trust Building, Philadelphia.

In recent years some of the furnace operators have taken less interest in reporting statistics on sales, stocks on hand, etc., but the real weakening of the association came with the resignations of three important producers. The Bethlehem Steel Corporation withdrew from membership about two years ago, at which time it severed its connection with all trade associations. A few months ago the Alan Wood Iron & Steel Co., the second largest producer in the East, not including Buffalo, resigned and was followed by the Colonial Iron Co., whose furnace is at Riddlesburg, Pa.

Recent meetings of the association have been enlivened by discussions over the importation of foreign pig iron, and while the pig iron imports did not furnish a primary cause for dissatisfaction within the association, they were a source of potential trouble.

At the meeting last Friday, a motion was made to dissolve the association, and the action taken was to refer the matter to a committee consisting of L. W. Francis, Witherbee, Sherman & Co. (Port Henry furnace); Robert C. Lea, Robesonia Iron Co., and Frank W. Jones, Eastern Steel Co. It is likely that this committee will report in favor of the formation of a furnace operators' association which will take the place of the present Eastern Pig Iron Association. As at present constituted, the membership includes operators, merchants and brokers.

John J. Howard, Lavino Furnace Co., is president of the association and W. S. Pilling is secretary, he having served continuously in that capacity since the organization was formed. There are no other officers.

Chicago

Buyers More Cautious—Records for Shipments Made in March

CHICAGO, April 7.—The decline in the stock market, the drop in wheat and the weakness of steel prices in producing centers east of here have all had their effect on sentiment among Western buyers, causing them to adopt an attitude of greater caution in purchasing fresh supplies of finished steel. Further weakness in raw materials is also commanding attention. The decline of 50c. a ton in non-Bessemer ore, added to the reduction of 80c. per ton a year ago, brings present prices down to $1.30 below the market level of 1923. Fuel is weak and scrap has been steadily receding. Finally, pig iron has commenced to give ground.

Notwithstanding these developments, local mills rolling the heavier finished steel products broke all records for shipments in March and in practically no cases have received requests for suspension of deliveries. In fact, customers are rather pressing for expedited shipments and this holds true particularly of tractor and farm implement manufacturers. Despite the seasonal character of the agricultural equipment industry, many implement plants are even yet receiving repeat orders and are finding it necessary to add to their production forces. Export business in implements is reported to be the best in history, orders from South America and South Africa being especially heavy. Automobile output is also gaining and a number of motor car builders, such as the Dodge and Nash companies, have broken all previous production records. Building permits indicate a sustained construction program, although fabricating awards for the week were light. Although railroad car buying has been lagging, there is now talk of a revival of activity in this field. The Southern Pacific purchase of 3400 cars is the largest rolling stock order placed in many weeks.

While new buying of steel is rather limited, there has been apparently no material recession in consumption. In some lines, as previously noted, consumption has actually increased. In fact, it may still be said that industrial activity, taken by and large, is at a satisfactory rate. The common complaint in both primary and secondary lines is not so much that the volume of business is below expectations, but rather that profits are small. The failure of efforts to advance prices has focused attention more and more on expenses and this means that serious consideration is being given to wage rates, which have undergone little change over a period of years.

The price situation in the iron and steel market showed little further change during the week. The recent declines in wire products and sheets caused buyers to expect recessions in some of the heavier rolled products. Local mills, however, still have large bookings in those commodities, particularly in bars, and are making an effort to hold their present quotations in the face of increasingly keen competition from outside producing centers. Plates and shapes are still generally quoted at 2.30c., Chicago, and bars at 2.20c., but the situation cannot be described as strong. In fact, scattered sales of bars have been made at as low as 2.10c.

The blowing out of a blast furnace at South Chicago reduces the number of active steel works stacks to 32 out of 35 in this district. Ingot production remains at close to 100 per cent of capacity. Mill rollings in the aggregate are heavy. The Gary rail mill is producing at the rate of 70,000 tons a month and on the basis of present bookings will be able to maintain that output for six months.

Pig Iron.—The market on local iron now ranges from $23 to $23.50, base furnace, with some sellers asking 50c. and others $1 for each ½ per cent increase in silicon content. At the moment there is more inquiry for iron in southern Michigan and Indiana than in Illinois and Wisconsin. This would indicate that foundries serving the automobile industry did not buy as far ahead as those in other lines. Moreover, automobile production is steadily increasing, the output of some motor car builders being the heaviest in history. A Michigan jobbing foundry has closed for 600 tons of foundry for second quarter at $21, base Lake Erie furnace. A western Michigan melter has closed for 500 tons of foundry for second quarter, this also being Lake Erie iron. A southern Michigan user is in the market for 1000 tons of foundry for second quarter. In this immediate territory the largest inquiry comes from a Wisconsin melter and calls for 400 to 500 tons of foundry. Farm implement makers are operating at an excellent rate and in many instances are using more iron than they anticipated. Not only manufacturers of field equipment and tractors are busy, but also makers of windmills, gas engines and numerous other commodities used on the farm. On the whole the melt in this territory is holding fairly well and it is probable that present stocks of users will be entirely wiped out before the close of this quarter. There remain some instances, however, of melters with surplus supplies who are offering material for resale. A Western user recently closed for 100 tons of low phosphorus at a price which would figure $32.65 for Chicago delivery. An Indiana melter is inquiring for a carload of low phosphorus. An inquiry for 100 tons of 8 to 9 per cent silvery is current. Charcoal remains firm at $26, furnace, and there are no prospects of a decline in view of low prices ruling on chemicals, particularly wood alcohol, on which severe foreign competition has been encountered.

Quotations on Northern foundry, high phosphorus, malleable and basic irons are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	$23.00 to $23.50
Northern No. 1 foundry, sil. 2.25 to 2.75	23.50 to 24.50
Malleable, not over 2.25 sil.	23.00 to 23.50
Basic	23.00 to 23.50
High phosphorus	23.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (barge and rail)	25.68
Southern No. 2, sil. 1.75 to 2.25	24.51 to 26.01
Low phos., sil. 1 to 2 per cent, copper free	32.65
Silvery, sil. 8 per cent	34.29
Electric ferrosilicon, 14 to 16 per cent	45.00

Ferroalloys.—An inquiry for several cars of spiegeleisen is current.

We quote 80 per cent ferromanganese, $122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, $85, delivered; spiegeleisen, 18 to 22 per cent, $40.58, delivered.

Plates.—Railroad purchases of rolling stock are exceedingly light and orders for steel from car builders are at a low ebb, bookings of local mills during the week amounting to only 2000 tons. Among other consumers of plates, boiler makers are operating at 100 per cent, reflecting the activity in the building industry, but tank fabricators are on a 50 per cent basis. The absence of oil storage tank awards is a matter of comment. Local producers are forced to concede freight in meeting the competition of outside mills at points east of here, but they are making a strenuous effort to hold the market at 2.30c., Chicago, for local and Western deliveries. New buying is restricted, but a railroad closed for 3000 tons of plates, shapes and bars at 2.30c. for the plates and shapes and 2.20c. for the bars.

The mill quotation is 2.30c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—Fabricating awards for the week were few, aggregating less than 4000 tons. Large new projects, however, continue to come up for bids, notable among them being the Ambassador Theater, St. Louis, 5000 tons; State Capitol, Lincoln, Neb., 2000 tons, and a viaduct, Milwaukee, 1000 tons. Competition among fabricators is increasingly keen. On a public letting of 960 tons for the Roosevelt Viaduct for the city of Chicago, the Milwaukee Bridge Co. was the successful bidder. Its figure on 700 tons, or the major portion of the work, was 3.53c. per lb. delivered, as against 3.62½c., the next bid. On 250 tons its tender

was 3.84c., as compared with 4.15c., the nearest competing figure. Plain material prices have not yet undergone a severe test in view of the small volume of new buying, but it is evident that mills are attempting to maintain 2.30c., Chicago, at least on tonnage for Chicago and Western deliveries.

The mill quotation on plain material is 2.30c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—Notwithstanding the fact that local mills broke all previous records for shipments in March, consumers have shown no inclination to curtail deliveries. The weakness of the Eastern market is causing buyers to hesitate about making additional commitments, but as yet local mills do not appear to be ready to abandon their quotation of 2.20c., Chicago, on soft steel bars, at least so far as local and Western deliveries are concerned. In competing for business of this city, freight must be conceded to meet the quotations of outside producing centers. Chicago producers have their heaviest forward bookings in bars and it would not be unreasonable to expect present bar quotations to hold longer than those on plates or structural shapes. Demand for bar iron remains light and although prices are unchanged at 2.10c., Chicago, numerous instances of shading have been reported.

Mill prices are: Mild steel bars, 2.20c.; common bar iron, 2.10c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.70c.

Sheets.—There is no material change in the sheet situation either as to prices or demand. Buyers are not anxious to contract for fresh supplies. In most instances they made heavy purchases for first quarter and that tonnage is lasting longer than was expected.

Chicago delivered prices from mill are 3.65c. for No. 28 black, 2.75c. to 2.85c. for No. 10 blue annealed and 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Wire Products.—Favorable weather has stimulated sales out of jobbers' stocks and this in turn has resulted in heavier specifications against contracts with mills. Specifications from manufacturing users have also improved. The price situation, however, is still weak. On cement coated nails as low as $2.05 delivered has been done. On nails prices as low as $2.85, f.o.b. Chicago district mill, have been named, and an extreme instance of $2.65 on bright plain wire is reported.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, $3.15 for 100 lb.; common wire nails, $3.25 per keg; cement coated nails, $2.55.

Rails and Track Supplies.—New business has been confined to scattered small lots. Tie plates have declined to $47, mill.

Standard Bessemer and Open-hearth rails, $43; light rails, rolled from billets, 1.90c. to 2c., f.o.b. makers' mill.

Standard railroad spikes, 3c. mill; track bolts with square nuts, 4c. mill; steel tie plates, 2.35c., f.o.b. mill; angle bars, 2.75c. f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts, 4.55c. base.

Bolts, Nuts and Rivets.—Makers of bolts and nuts have covered most of their customers with second quarter contracts. It is too early in the quarter to expect heavy specifications, and new business has been in insufficient volume to test prices. It is believed, however, that sellers will maintain present discounts as long as mill prices on bars hold. Small rivets are steady at 70 and 10 off, Chicago, and large rivets at $2.75, Chicago. For mill prices see page 1089.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to ⅞ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ⅞ x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, squares, tapped or blank, $3.50 off; hot pressed nuts, hexagons, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Cast Iron Pipe.—Detroit has rejected all bids on 12,865 tons and will readvertise. This is the second time tenders on this tonnage have been rejected. Chicago has awarded 570 tons to the National Cast Iron Pipe Co. Henry Rees, Quincy, Ill., is low bidder on the general contract for 600 tons for Waukegan, Ill. Milwaukee has asked for revised bids, April 14, on 1000 tons of 6-in., 1000 tons of 8-in. and 500 tons of 12-in. Class C water pipe. The Lloyd Construction Co., Xenia, Ohio, has the general contract for 1400 tons of 6-, 8-, 10- and 12-in. for Mahoning County, Ohio. Prices are uncertain in view of the sharp bidding at Detroit, where foreign competition was encountered, but it is probable that a range from $46.76 to $48.20, delivered, on 6-in. and over is representative.

Reinforcing Bars.—The arrival of fair weather has stimulated building activity and awards of reinforcing bars during the week were numerous. Lettings include:

Plankinton Packing Co. plant, Milwaukee, 300 tons to Kalman Steel Co.

Public school, Catalpa and Christiana Streets, Chicago, 150 tons to Barton Spiderweb System Co.

Miller & Hart, Inc., packing plant addition, Chicago, 150 tons to American System of Reinforcing.

Shriners' Hospital, Chicago, 105 tons to Concrete Engineering Co.

South Chicago Savings Bank, South Chicago, 160 tons to Kalman Steel Co.

Missouri road work, 100 tons to Olney J. Dean & Co.

Illinois State road work, 500 tons to Olney J. Dean & Co.

Municipal work, Minneapolis, 100 tons to C. A. P. Turner Co.

Pending work includes:

Clark Motor Co. garage building, Milwaukee, 150 tons.

Park Hotel, Chicago, 160 tons.

Freeport, Ill., high school, 160 tons.

American National Bank building, Wausau, Wis., 215 tons, general contract awarded to Hutter Construction Co., Fond du Lac.

Medical building for University of Iowa, Iowa City, 500 tons, general contract awarded to Madsen Construction Co., Minneapolis.

Old Material.—Prices have again declined in a market which shows no signs of striking bottom. An independent mill closed for 20,000 tons of heavy melting at $15.50 a gross ton delivered, a recession of 50c. a ton from the prices which governed the last previous purchase. A large steel foundry has bought a considerable tonnage of low phosphorus steel scrap and there have been scattered purchases of borings, malleable, cast, rerolling rails and miscellaneous rails. As a whole, however, consumer interest in the market is lagging. In some instances, railroad offerings have brought higher than the market, but such purchases are made to fill unexpired orders taken before prices had receded to present low levels. New lists include the St. Paul, 1200 tons; the Soo Line, 900 tons; the Chicago & Eastern Illinois, 700 tons, and the Crane Co., 1000 tons of borings.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	$17.00	to	$17.50
Cast iron car wheels	16.00	to	16.50
Relaying rails, 56 and 60 lb.	25.00	to	26.00
Relaying rails, 65 lb. and heavier	26.00	to	31.00
Forged steel car wheels	18.00	to	18.50
Railroad tires, charging box size	18.00	to	18.50
Railroad leaf springs, cut apart	18.00	to	18.50
Rails for rolling	16.00	to	16.50
Steel rails, less than 3 ft.	17.50	to	18.00
Heavy melting steel	15.00	to	15.50
Frogs, switches and guards cut apart	15.25	to	15.75
Shoveling steel	14.75	to	15.25
Drop forge flashings	11.00	to	11.50
Hydraulic compressed sheets	13.00	to	13.50
Axle turnings	13.50	to	14.00
Steel angle bars	16.50	to	17.00
Steel knuckles and couplers	18.00	to	18.50
Coil springs	19.00	to	19.50
Low phos. punchings	17.00	to	17.50
Machine shop turnings	10.00	to	10.50
Cast borings	11.50	to	12.00
Short shoveling turnings	11.50	to	12.00
Railroad malleable	17.50	to	18.00
Agricultural malleable	16.50	to	17.00

Per Net Ton

Iron angle and splice bars	17.00	to	17.50
Iron arch bars and transoms	19.00	to	19.50
Iron car axles	25.50	to	26.00
Steel car axles	16.00	to	16.50
No. 1 busheling	11.50	to	12.00
No. 2 busheling	8.50	to	9.00
Pipes and flues	9.50	to	10.00
No. 1 railroad wrought	13.00	to	13.50
No. 2 railroad wrought	13.50	to	14.00
No. 1 machinery cast	17.50	to	18.00
No. 1 railroad cast	15.50	to	16.00
No. 1 agricultural cast	15.50	to	16.00
Locomotive tires, smooth	16.00	to	16.50
Stove plate	13.00	to	13.50
Grate bars	13.00	to	13.50
Brake shoes	13.00	to	13.50

New York

Pig Iron Market Dull—Keen Competition in Cast Iron Pipe

NEW YORK, April 7.—Although very little Lake Superior ore is used in the East, it is freely admitted by pig iron sellers that the reduction in ore prices just announced is likely to retard buying and cause pressure for lower prices on the part of buyers. The market is weak, especially in the Buffalo district, where as low as $20.25, furnace, has been named by at least one company for No. 2X. This does not, however, signify necessarily that less than $20 could be done on No. 2 plain. In eastern Pennsylvania, prices are firmer than at Buffalo and $22 is the lowest reported price, while $22.50 has been obtained on small lots. The largest purchase of the past week was for about 4000 tons of basic and malleable by the Gould Coupler Co.

Coke.—Producers are holding a tight rein on output and distress coke has disappeared. New inquiry is almost nil. With few exceptions buyers are covered for this quarter. Prices are weak, and without any immediate promise of strength, some operators believe. For prompt delivery $3.25 is the common figure on furnace grade and on foundry, $4 to $4.25 can be done, but $4.25 usually prevails. The Rainey-Wood Coke Co. has put in several ovens, while three other producers have made further curtailment in output, in one case affecting 100 ovens. By-product coke is still quoted $10.41, Jersey City or Newark.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$24.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	25.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.02
Buffalo, sil. 1.75 to 2.25	$24.91 to 25.91
No. 2 Virginia, sil. 1.75 to 2.25	29.44

Ferroalloys.—New business in both ferromanganese and spiegeleisen continues light, inquiries and sales being confined to carloads and small lots, with an occasional inquiry for 100 tons. Consumers in nearly all cases specify prompt shipment. Shipments on contract continue heavy, with now and then a request for urgent delivery. Prices continue unchanged.

Cast Iron Pipe.—Prices of bell and spigot pipe are still lacking in stability. Public lettings bring out low quotations, as American makers endeavor to meet the competition of the French pipe producer seeking business in the United States. On the large municipal awards, technicalities have arisen in many instances where the low bid was submitted by the Pont-a-Mousson works. The second opening of bids on the 12,000 tons of pipe for Oneida, N. Y., all the original bids having been rejected, resulted in a low bid the second time by the French concern, but award is still pending. On 1400 tons of 48-in. pipe for the City of Boston, the French company bid low, but as 13-ft. laying lengths were offered instead of 12-ft., the American practice, award was made to the Warren Foundry & Pipe Co. Recent quotations on water and gas pipe have covered a range of several dollars a ton, from about $49.60 to $53.60 per ton, depending upon desirability of business and the competition. The soil pipe market is definitely back to the prices in force before the recent advance, current quotations offering 2½ points higher discount from list. Jobbers are well situated to meet normal demand, with tonnage under order for delivery into June, but foundries are covered for only a few weeks ahead, and the weak pig iron market is not conducive to greater activity in purchasing.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $52.60 to $53.60; 4-in. and 5-in., $57.60 to $58.60; 3-in., $67.60 to $68.60, with $5 additional for Class A and gas pipe. Discounts on both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 40 to 41¼ per cent off list; heavy, 50 to 51¼ per cent off list.

Warehouse Business.—Prices are easier, the demand for most lines being only fair and competition keen. Several mills are taking warehouse lots, offering prompt delivery on even a few hundred pounds and obviously shipping out of mill stock. At such times price cutting is prevalent, and right now few lines have not felt this condition. There was a good movement in structural steel, but bars were less active. Pipe demand also was lighter. On new spring steel contracts with dealers, mills asked a $4 advance but seem to have compromised on $2. We quote boiler tubes per 100 ft. as follows:

Lapwelded steel tubes, 2-in., $17.33; seamless steel, 2-in., $20.24; charcoal iron, 2-in., $25; 4-in., $67.

Finished Iron and Steel.—In some of the lighter finished products, principally wire products and blue annealed sheets, there has been a slight quickening of demand since the first of the month, but the heavier products are still moving slowly so far as new orders are concerned, though mill production is fairly well maintained. There is general price weakness as affecting products, but it is not widespread as to companies, most of the concessions being offered by relatively few mills which are in the most urgent need of orders. Plates are on a 2c. basis. Bids opened by the New York Central Lines last week disclosed a quotation of $2.75 per 100 lb. on wire nails f.o.b. a Cleveland mill, other makers quoting $2.85. On blue annealed sheets an Ohio mill quoted 2.55c., base, but most of the other quotations were at 2.60c. or higher, Pittsburgh basis. One quotation of 4.55c. on galvanized sheets was the only deviation from 4.60c. No quotations had been asked for on plates, shapes and bars. The market on steel bars remains quite firm at 2.10c., Pittsburgh, and reports of lower figures on reinforcing bars are generally unsubstantiated. Prices on structural shapes, which have been irregular for the last few weeks, are about the same. Some mills say they are still getting 2.10c., but quotations of 1.90c. and 1.95c., Pittsburgh basis, have frequently appeared. A Broadway theater and office building, which will take 6000 tons of steel, is the largest new structural inquiry. A good deal of building construction is being held up, presumably for lower prices. The Southern Pacific Railroad has ordered 3200 freight cars.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.44c.; plates, 2.34c.; structural shapes, 2.34c.

Old Material.—Prices of practically all grades continue to settle. No. 1 heavy melting steel is still being purchased by brokers at $14.50 to $15 per ton, delivered eastern Pennsylvania, but transactions seldom involve more than a few carloads. On most grades brokers are apparently quite willing to make sales at current prices in the belief that contracts can be filled without much difficulty at a profitable margin. Borings and turnings are unchanged at $12.50, delivered to eastern Pennsylvania consumers, but machine shop turnings are not quotable at much more than $12.50 per ton, delivered to a consumer taking a $3.50 per ton freight rate, or at $9 per ton, New York. A New Jersey consumer of stove plate has reduced his offering price to $13 and brokers are paying $12.50 per ton, delivered, or, deducting the $2.02 freight rate, about $10.50 per ton, New York. Delivered to a Phoenixville consumer, $13 per ton is paid by brokers for stove plate, or $9.50 per ton, New York. Activity in all grades is at as low an ebb as at any time this year.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$10.50 to $11.00
Heavy melting steel, railroad or equivalent	11.50 to 12.00
Rails for rolling	14.00 to 14.50
Relaying rails, nominal	24.00 to 25.00
Steel car axles	18.50 to 19.00
Iron car axles	24.00 to 24.50
No. 1 railroad wrought	14.00 to 14.50
Forge fire	10.00 to 10.50
No. 1 yard wrought, long	13.00 to 13.50
Cast borings (steel mill)	9.00 to 9.50
Cast borings (chemical)	15.00 to 15.50
Machine shop turnings	9.00
Mixed borings and turnings	9.00 to 10.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.25 to 11.75
Stove plate	9.50 to 10.50
Locomotive grate bars	11.50 to 12.00
Malleable cast (railroad)	14.50 to 15.00
Cast iron car wheels	13.50 to 14.50
No. 1 heavy breakable cast	12.00 to 12.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.00 to $16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.)	13.00 to 13.50

Buffalo

Buying of Pig Iron Declines and Prices Are Weak

BUFFALO, April 7.—Demand has fallen off since last week, with only 5000 tons in the aggregate offering. Among the more notable ones was a foundry inquiry of 900 tons and a foundry inquiry for 750 tons, both from New York State. The Gould Coupler Co.'s malleable, totaling 2000 tons, is said to have been placed with a Buffalo maker. The Gilbert & Barker Mfg. Co. inquiry for 2000 tons of foundry, noted last week, is also said to have been placed, but outside this district. Prices range from $20 to $21 on No. 2 plain, though some No. 2X iron is believed to have been placed at $20.25. At the same time small lots were sold this week by one maker, who sold a total of 1100 tons, at prices somewhat higher.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$20.00 to $21.00
No. 2X foundry, sil. 2.25 to 2.75	20.25 to 21.00
No. 1 foundry, sil. 2.75 to 3.25	21.00 to 22.00
Malleable, sil. up to 2.25	20.00 to 21.00
Basic	21.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—The situation is still quiet, with no immediate sign of improved business. The bar and shape prices are firm at 2.365c. delivered Buffalo. Sheets are not so strong. The going price is 3.50c., freight allowed, for black and 4.60c., freight allowed, for galvanized, though it is probable that these prices could be shaded to 3.40c. and 4.50c. The looked-for improvement in construction work has not yet materialized. A hospital job will require 700 tons and plans for the new Fort Erie-Buffalo bridge calls for 8500 to 9000 tons. Three small roadwork mesh jobs are reported and the Elks' Club will require 100 tons of reinforcing bars.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, $5.80c.; cold rolled shapes, 4.65c.; cold rolled rounds, 4.20c.; wire nails, 4.00c.; black wire, 4.05c.

Old Material.—The market is extremely quiet, with little or no buying by the mills. The only notable transaction of the week was the purchase by a Depew consumer of about 2000 tons of heavy melting steel at a price said to have been about $17.25. Two of the larger Buffalo mills, which generally supply most of the activity in this market, have retired temporarily and most of the buying is being done by dealers. Dealers believe that there will be little departure from the present condition of the market for about a month at least. Blast furnace demand for borings and turnings has dropped off and the demand for No. 1 machinery cast is nil. Specialties are off. No. 1 busheling and railroad malleable have softened.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$16.75 to $17.50
Low phosphorus	19.00 to 20.00
No. 1 railroad wrought	15.00 to 15.50
Car wheels	18.00 to 18.50
Machine shop turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	15.00 to 15.50
Stove plate	15.00 to 15.25
Grate bars	13.00 to 13.50
Bundled sheets	12.00 to 12.50
Hydraulic compressed	15.50 to 16.00
Railroad malleable	17.50 to 18.00
No. 1 cast scrap	17.00 to 17.50
Iron axles	27.00 to 28.00
Steel axles	17.50 to 18.00

Birmingham

One Seller Shades Usual Nominal Prices on Pig Iron

BIRMINGHAM, ALA., April 7.—The Southern pig iron market is still at a standstill. Very few sales have been made recently and the business booked was in small lots. Consumers have given further evidence of looking for a lower quotation. Furnace interests have been maintaining that the quotation on a $22 per ton base for No. 2 foundry is lower than the average price last year and that the price is not too much for iron now. It is problematical whether there would be any activity in iron buying if the prices were lowered $2. The larger melters, cast iron pressure pipe makers, have some iron on hand and much still due them and are not buying. They assert they have stock sufficient for at least another month. Sixteen blast furnaces are on foundry iron in this State. One single furnace has been selling at from $1 to $2 under the $22 quotation for the past two weeks and longer, but is not able to take on much business.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$21.50 to $22.00
No. 1 foundry, 2.25 to 2.75 sil.	22.00 to 22.50
Basic	21.00 to 22.00
Charcoal, warm blast	30.00

Steel.—Production remains unchanged in this section and very little is finding its way into warehouses, various shapes being in strong demand and shipments equal to make. Quotations also remain unchanged, bars being quoted 2.25c. to 2.35c., Birmingham.

Pipe.—All cast iron pressure pipe plants of this district are in full operation, with much business booked. Lull in trade is accounted for by competition of foreign pipe. However, expectations are expressed that the present year will be as good as 1924.

Coke.—Production is good and demand strong, everything considered, for coke, iron and steel companies requiring a large amount for their own use and independent companies handling the outside trade. Quotations for foundry coke are maintained around $5 still, with some little bee-hive coke bringing $5.25.

Old Material.—Still slow is the scrap iron and steel market in the Birmingham district, very little buying being done. There will probably be no material improvement until the pig iron market begins taking on renewed life. Quotations are weak, but hold to same levels noted for the past four weeks.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	14.00 to 15.00
Railroad wrought	13.00 to 14.00
Steel axles	18.00 to 19.00
Iron axles	19.00 to 20.00
Steel rails	14.00 to 15.00
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 17.00
Stove plate	14.50 to 15.50
Machine shop turnings	8.00 to 9.00
Cast iron borings	8.00 to 9.00
Rails for rolling	16.50 to 17.00

St. Louis

Very Little Business in Pig Iron at the Opening of the Second Quarter

ST. LOUIS, April 7.—The second quarter opened with very little second quarter business. The St. Louis Coke & Iron Co. has sold 3000 tons of basic for April and May delivery to a St. Louis melter, and a machinery manufacturer bought 500 tons of foundry iron for April shipment. The only pending inquiry is for 2000 tons of basic for April delivery for an East Side concern. The market is rather weak as a result of offerings of Southern iron at $18.50 Birmingham, by a Tennessee maker, and concessions made by a Chicago maker. In addition to uncertainty as to price movement, there has been a slight decrease in the melt in the district and a backwardness in the placing of orders for castings.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25	$25.16
Northern malleable, sil. 1.75 to 2.25	26.16
Basic	26.16
Southern fdy., sil. 1.75 to 2.25 (rail)	$23.67 to 27.17
Southern fdy., sil. 1.75 to 2.25 (rail and water)	25.28
Granite City iron, sil. 1.75 to 2.25	25.31 to 26.31

Finished Iron and Steel.—Warehouses report that they are beginning to receive orders for materials from

the tornado district of southern Illinois and Missouri. Sales of reinforcing bars from stocks have been fairly large for the last few weeks. Fabricators of structural steel report that business is exceedingly dull and there is nothing in sight requiring any considerable tonnage. Business in other lines is quiet.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, cold rolled, one pass, 4.80c.; galvanized steel sheets, No. 28, 5.80c.; black corrugated sheets, 4.95c.; galvanized, 5.95c.; cold-rolled rounds, shafting and screw stock, 3.95c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, ⅞ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, $3.50; hexagons, blank or tapped, $4 off list.

Coke.—Foundry coke continues in good demand and some fair size contracts are being made for second quarter shipment. The by-product ovens in the district are enabled to ship current production. The local company is quoting $11 while Granite City is offering foundry coke at $9 f.o.b. ovens. The lead and zinc interests continue to buy liberally, although their operations have been curtailed.

Old Material.—The market for old material continues to decline as the result of the lack of buying by consumers in this district. They are well stocked with most items and in some instances requests have been made to delay shipments on contracts. Railroads centering in St. Louis have been unusually active in the sale of old material and considerable trading has been done over the telephone within the last few weeks. New lists mailed include the following: St. Louis & Hannibal, 1500 tons; St. Louis and San Francisco, 1300 tons; Chicago & Eastern Illinois, 500 tons; Missouri Pacific, 1200 tons; and 400 tons for the Big 4, this being that road's first deviation from its policy of blind lists.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$14.00 to $14.50
Rails for rolling	17.00 to 17.50
Steel rails less than 3 feet	19.00 to 19.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and under	32.50 to 33.50
Cast iron car wheels	16.50 to 17.00
Heavy melting steel	15.00 to 15.50
Heavy shoveling steel	15.00 to 15.50
Frogs, switches and guards cut apart	16.00 to 16.50
Railroad springs	19.00 to 19.50
Heavy axles and tire turnings	12.00 to 12.50
No. 1 locomotive tires	17.75 to 18.25
Per Net Ton	
Steel angle bars	15.75 to 16.25
Steel car axles	17.50 to 18.00
Iron car axles	24.50 to 25.00
Wrought iron bars and transoms	18.25 to 18.75
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	13.50 to 14.00
Cast iron borings	11.25 to 11.75
No. 1 busheling	12.50 to 13.00
No. 1 railroad cast	16.00 to 16.50
No. 1 machinery cast	18.00 to 18.50
Railroad malleable	13.75 to 14.25
Machine shop turnings	8.00 to 8.50
Champion bundled sheets	8.00 to 8.50

Boston

Buffalo Furnaces Are Shading Prices, but Pennsylvania Are Holding

BOSTON, April 7.—Buffalo furnaces continue to shade prices on pig iron, but eastern Pennsylvania, Virginia and Alabama generally are holding to recent schedule. Buffalo furnaces are securing the cream of current business. How much longer eastern Pennsylvania furnaces can stand pat is problematical. Two sales, one of 600 tons No. 2X, second quarter, and the other, 700 tons No. 2X and 300 tons No. 1X, third quarter, to a Massachusetts machinery maker and a Rhode Island machinery maker, respectively, constituted the largest transactions reported here the past week. Otherwise business was confined to a car here and there. Buffalo No. 2X sold at $25.16 delivered or $20.25 furnace, which, with differentials considered, means $19.75 furnace base, a new low record for this movement. Buffalo No. 1X sold at only slightly higher prices than No. 2X, due to offers of German iron at $24.50 delivered. Melters, however, are showing a preference for domestic iron. On the most attractive eastern Pennsylvania furnace offers, the best foundries could do on No. 2X was $22.50 furnace and on No. 1X, $23. Recent sales include No. 1X Belgian iron at $23.25 on dock duty paid or about $25 delivered, and numerous grades of Dutch and Indian irons are obtainable on the same basis. Total local receipts of foreign iron in March were 11,365 tons, consisting of 7142 tons Indian, 2250 tons Dutch, 500 tons Scotch and 1473 tons Belgian. Importations for the first quarter of this year were 11,855 tons Dutch, 16,567 tons Indian, 750 tons English, 3606 tons Belgian, and 500 tons Scotch, a grand total of 33,278 tons.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.65 to $26.15
East. Penn., sil. 2.25 to 2.75	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25	24.66 to 25.41
Buffalo, sil. 2.25 to 2.75	25.16 to 25.91
Virginia, sil. 1.75 to 2.25	29.42 to 29.92
Virginia, sil. 2.25 to 2.75	29.92 to 30.42
Alabama, sil. 1.75 to 2.25	31.60
Alabama, sil. 2.25 to 2.75	32.10

Finished Steel.—Buying of finished steel products continues on a hand-to-mouth basis. Competition for business remains keen and prices are barely steady. Practically all current plate business is taken by mills at $2,36½ delivered Boston common rate points, or 2c. Pittsburgh base. The price of 2.10c., Pittsburgh base, appears to be a thing of the past. Shapes can be purchased on about the same basis as plates, and the undertone of the bar market is not as firm as it was a month or two ago. German plates, bars, angles, tees and similar structural steel are offered at 1.96½c., duty paid, delivered at consuming point. Some of the New England street railways have been buying switches, crossovers and the like fairly freely from sellers making liberal price concessions.

Coke.—Specifications against first half by-product foundry coke contracts are more numerous. The improvement in business, according to oven interests, is due to increasing activity in the jobbing foundry field, and not to the recent reduction of 50c. a ton in the price of fuel. Jobbing foundries being the smallest of coke consumers, the aggregate weekly oven shipments continue well below those for the corresponding period last year, the current improvement in business notwithstanding. The market on local by-product foundry coke is $11.50 a ton delivered within New England.

Old Material.—The old material market is marking time. Less business was transacted in this market the past week than during any similar period this year. Holders of scrap are disinclined to sell at prevailing prices, while on the other hand brokers have no orders of consequence in hand. The most encouraging feature in the situation is that prices are no lower.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$19.00 to $19.50
No. 2 machinery cast	17.00 to 17.50
Stove plates	13.50 to 14.00
Railroad malleable	20.00 to 21.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$11.00 to $12.00
No. 1 railroad wrought	13.75 to 14.00
No. 1 yard wrought	12.75 to 13.50
Wrought pipe (1-in. in diam., over 2 ft. long)	10.50 to 11.00
Machine shop turnings	8.00 to 8.50
Cast iron borings, chemical	13.00 to 13.50
Cast iron borings, rolling mill	8.50 to 9.00
Blast furnace borings and turnings	7.75 to 8.00
Forge scrap	9.50 to 10.00
Bundled skeleton	8.50 to 10.00
Bundled cotton ties	8.50 to 9.50
Forged flashings	9.50 to 10.00
Shafting	17.50 to 18.00
Street car axles	17.50 to 18.00
Rails for rerolling	11.50 to 13.50
Scrap rails	11.00 to 12.00

The seventh annual conference of employees' representatives and the management's representatives under the Employees' Representation Plan was recently held by the Youngstown Sheet & Tube Co. at the East bell outlined some of the problems confronting the company and solicited full cooperation of workers.

Cincinnati

Moderate Increase in Sales of Pig Iron, but Prices Are Still Soft

CINCINNATI, April 7.—An increase in pig iron sales was noted in the local market during the past week, but prices are soft. Buying for the second quarter is being done in small volume and many consumers have sufficient pig iron on hand to carry them along for a considerable period. Dealers feel that the market will continue at about the present level in the immediate future. The furnace of the Belfont Iron Works, Ironton, Ohio, resumed operations the past week. Sales of Northern iron have shown an improvement. A Saginaw, Mich., consumer purchased 650 tons of 10 to 11 per cent Jackson County silvery for April and May shipment. The Louisville & Nashville Railroad bought 200 tons of Northern iron. A dealer sold 200 tons of Northern malleable to a Hamilton, Ohio, consumer for April delivery. A Richmond, Ind., foundry purchased 100 tons of Northern foundry for immediate delivery. A northern Ohio consumer bought about 100 tons of 6 to 7 per cent Northern silvery for April delivery. Inquiries are more numerous than a week ago. The Seybold Machine Co., Dayton, Ohio, is in the market for 1000 tons of Northern foundry iron for shipment from May to September. An inquiry is out from a Hamilton, Ohio, consumer for 500 tons of No. 2 Northern iron for second quarter delivery. Fuller & Sons, Kalamazoo, Mich., are inquiring for about 150 tons of Northern iron. A central Indiana melter is in the market for 150 tons of Northern iron. In the Southern pig iron market, sales have been quiet. A local dealer sold 400 tons of Tennessee iron to a Dayton, Ohio, melter. A northern Ohio melter purchased 100 tons of Tennessee iron. No sales of Alabama iron have been reported locally. Inquiries are for small tonnages. The Henry Vogt Machine Co., Louisville, is inquiring for about 100 tons of Southern iron. The Southern Railroad is in the market also for 100 tons of Southern. Prices on Northern iron are weak, ranging from $21 to $22 furnace in the Ironton district. Tennessee iron continues to sell at $18.50, Birmingham. Alabama furnaces are asking $21 to $22, Birmingham, but are not selling any iron at those prices.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$24.05 to $25.05
Alabama fdy., sil. 2.25 to 2.75	24.55 to 25.55
Tennessee fdy., sil. 1.75 to 2.25	22.55
Southern Ohio silvery, 8 per cent	32.77
Southern Ohio fdy., sil. 1.75 to 2.25	23.27 to 24.27
Southern Ohio, basic (nominal)	24.27
Southern Ohio malleable	24.27 to 25.27

Wire Goods.—There is still a depression in the nail market. Although some of the mills are trying to hold to the quotation of 2.85c., Pittsburgh, there are others which are selling at 2.75c. Old contracts are being renewed in many cases at the latter rate in order to hold business. It is reported that the Cleveland, Cincinnati, Chicago & St. Louis Railroad Co. purchased a considerable tonnage of nails the past week at 2.75c. However, business in nails is only fair and most consumers are buying in small quantities, even though their stock is low. The demand for wire is weak at present. The prevailing price is 2.60c., Pittsburgh, although some sales have been made below this level.

Sheets.—Further weakness has developed in the local market and prices have fallen as a result. Buyers are pursuing a waiting policy and are disposed to strike a bargain for the best available quotation. Sellers, eager to book business to keep mills operating on a heavy schedule, are offering price concessions to secure orders. There is little disposition on the part of buyers to anticipate requirements more than 30 to 60 days. This is probably due in large part to the uncertainty regarding prices. Some executives feel that the market has hit the bottom, but others are just as positive that the downward price swing has not yet reached its lowest point. Black sheets are being sold at 3.40c., Pittsburgh, to 3.50c., but reliable information reveals that as low as 3.30c. has been offered. Some believe that business can be done on a large tonnage at 3.25c., but this does not represent the market. Galvanized sheets are selling at 3.60c., Pittsburgh, to 3.50c., while blue annealed are quoted at 2.60c., Pittsburgh, to 2.70c., with the bulk of the business going at the former figure. Auto sheets are in little demand and are commanding a price of 4.60c.

Tin Plate.—Mills are reported to be running on a heavy schedule to supply the demand from canning manufacturers. Specifications that have been filed for the second quarter call for large production by the mills. There has been no change in price from $5.50 per base box, Pittsburgh.

Reinforcing Bars.—General construction work is on the increase and this improvement is reflected in the market for reinforcing bars. The Bourne-Fuller Co. was awarded a contract for 500 tons for the new building of the J. Charles McCullough Seed Co. This was the only award of importance during the week, although there has been a considerable volume of small jobs let. An award on the Children's Hospital, about 300 tons, is expected during the coming week. Among the pending jobs are: Warehouse for the Kroger Grocery & Baking Co., 250 tons, for which C. F. Stegner, Second National Bank Building, Cincinnati, is architect; the Phelps Apartments, 600 tons, the general contract for which is in the hands of the Ohio Building & Construction Co.; hotel on Garfield Place, 125 tons, for which Elzner & Anderson, Denton Building, Cincinnati, are the architects. The price on new billet stock is fairly firm at 2.10c., mill, and quotations on rerolled bars is around 2.00c., mill, although it is reported that business can be done at a lower figure.

Structural Steel.—The local market is extremely quiet at present as far as large jobs are concerned. No sizable awards have been announced in the past week. The General Iron Works received two awards totaling 100 tons. Pending projects are few. The largest is a bridge across the Ohio River at Huntington, W. Va., which will require approximately 3500 tons. It is understood that the Mount Vernon Bridge Co. is the low bidder for this job. The College Hill School, taking about 200 tons, has not yet been awarded. Prices are firm at 2.10c., Pittsburgh.

Plates, Shapes and Bars.—Business is reported to be rather slow at present, although a fair volume of small orders has been placed in the past week. Consumers are ordering only for immediate requirements and there is no indication that they will depart from this policy in the immediate future. Specifications against contracts are fairly good. The market is holding firm at 2.10c., Pittsburgh. The price of 2.20c., Pittsburgh, has practically disappeared. Sellers are optimistic and feel that the volume of sales during April will be favorable.

Warehouse Business.—Cincinnati dealers report that their volume of business during March showed a slight increase over the previous month. They feel that the outlook for the immediate future is for a slow improvement in sales that will carry the April volume ahead of that during March. The number of orders that have been coming in is large, but tonnage remains light, the majority of sales being in small lots. Consumers are holding to a conservative buying policy and are not anticipating future requirements. There is a fairly good demand for structural steel. The market for sheets is weak. Prices remain stationary. One dealer made a sale of 120 tons of bars the past week at 3.30c.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, $3.25 per 100 lb.; common wire nails, $3.25 per keg base; cement coated nails, $2.65 per keg; chain, $7.55 per 100 lb. base; large round head rivets, $3.75 base; small rivets, 65 per cent off list. Boiler tubes, prices net per 100 ft., lap welded steel tubes, 2-in., $18; 4-in., $38; seamless, 2-in., $19; 4-in., $39.

Coke.—Coke sales have been limited. Specifications against contracts are fair. Prices are about the same as a week ago, but are displaying a weak tendency.

The Southern Railroad is inquiring for 100 tons of coke.

Connellsville furnace, $3.25 to $3.75; foundry; $4.25 to $5.00; New River foundry, $8.00 to $8.50; Wise County furnace, $4.00 to $4.75; foundry, $4.50 to $6.00; by-product foundry, $6.50 Connellsville basis.

Old Material.—The scrap iron market is practically stagnant. Consumers are not inclined to buy at present and inquiries are few. Dealers have considerable material on hand. Prices have weakened on several items. One large dealer reports an increase in sales.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	$14.00 to $14.50
Scrap rails for melting	14.00 to 14.50
Short rails	18.00 to 18.50
Relaying rails	28.00 to 28.50
Rails for rolling	15.50 to 16.00
Old car wheels	14.00 to 14.50
No. 1 locomotive tires	17.00 to 17.50
Railroad malleable	16.50 to 17.00
Agricultural malleable	15.00 to 15.50
Loose sheet clippings	10.00 to 10.50
Champion bundled sheets	12.50 to 13.00
Per Net Ton	
Cast iron borings	8.50 to 9.00
Machine shop turnings	8.00 to 8.50
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	15.50 to 16.00
Iron axles	22.00 to 22.50
No. 1 railroad wrought	11.50 to 12.00
Pipes and flues	7.50 to 8.50
No. 1 busheling	10.00 to 10.50
Mixed bushelings	9.00 to 9.50
Burnt cast	10.00 to 10.50
Stove plate	10.50 to 11.00
Brake shoes	11.50 to 12.00

San Francisco

Moderately Consistent Business Continues Despite Weakness in Price Tendency

SAN FRANCISCO, March 28 (*By Air Mail*).—In spite of the apparent weaker general tendency in prices the volume of current business in the Pacific Coast iron and steel market continues moderately consistent in nearly all lines. There is no large buying, but there is less hesitancy than there was a few weeks ago.

Construction work is going ahead. Several good size structural jobs were let during the past week, and six new projects have come up for figuring. Most of the local fabricating shops are busy, and the reinforcing bar jobbers are figuring on a number of sizeable jobs.

Almost two years after a bond issue of $4,496,000 was voted for the project, the contract for the construction of the tube under the Oakland-Alameda estuary was awarded during the past week by the Alameda County Board of Supervisors. The contract went to the A. J. Crocker Co. of San Francisco on a low bid of $3,882,958.40. The proposed tube will be a Type D subway with membrane waterproofing, but because of financial details that are yet to be settled, it will be several weeks before sub-contracts are closed.

Pig Iron.—A small quantity of Indian foundry iron was sold a week ago in Los Angeles at about $26 a ton duty paid, and another shipment is en route. Local importers also expect shipments of several hundred tons of English foundry iron early in April and early in May, which is being quoted at $27 to $28.50, duty paid, San Francisco, according to the quality of the iron. Dutch iron is being offered at $25.25, duty paid in San Francisco. Sales of foreign iron are confined to small tonnages. The price of English iron is somewhat stronger. This is not because of higher furnace prices in England, but because the rates for chartered vessels are higher and also because the pound sterling is stronger. The buying of Utah iron continues to increase, and prices are firm. We quote:

*Utah basic	$27.25 to $28.25
*Utah foundry, sil. 1.75 to 2.25	27.50 to 28.50
**Scotch foundry	28.00 to 30.00
**English foundry	27.00 to 28.00
**Belgian foundry	26.00 to 27.00
**Dutch foundry	25.25 to 26.50
**Indian foundry	26.00 to 27.00
*Birmingham, Ala., foundry, sil. 2.75 to 3.25	$1.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Ferroalloys.—A local importer recently took several new orders for Swedish ferrosilicon at $93, duty paid, incoming dock, for May shipment. English ferromanganese is quiet at $117.50, duty paid, incoming dock.

Shapes.—Jobs let during the past week totaled 1745 tons, and new projects calling for 3200 tons have come up for figuring. Prices are soft at 2.55c. to 2.60c., c.i.f., although it is doubtful whether anything better than 2.55c. could be obtained except on very desirable tonnages.

Plates.—Contracts placed during the past week amounted to 1400 tons. The General Petroleum Co. placed 400 tons of plates and 240 tons of channels. The Willamette Iron & Steel Co., Portland, Ore., took 750 tons for the Tacoma pipe line job, and the Steel Tank & Pipe Co. is low bidder on the Seattle pipe line job, about 120 tons. Prices are soft, 2.50c. to 2.60c., c.i.f., being quoted, with persistent rumors that 2.45c. is possible on large tonnages. Several good size jobs are up for figures.

Sheets.—Inquiries are somewhat better, although there is no large amount of buying at present. Prices are weak. There are some indications that lend color to a belief that exists in some quarters that prices are likely to stiffen before long. Current quotations are as follows: Blue annealed, 3.41c. to 3.51c., c.i.f. Black sheets, 4.21c., c.i.f. Galvanized sheets, 5.31c. to 5.41c., c.i.f.

Bars.—Soft steel bars are holding at 2.55c. to 2.60c., base, and soft steel bands are 3.30c. and 3.35c., base. Reinforcing bars are steady at 3.35c., base, carload, and 3.80c., base, l.c.l. A number of good size reinforcing jobs are up for figures, but comparatively few jobs requiring 100 tons or more have been let recently. The Los Angeles Iron & Steel Co. took 450 tons for the Olympia Auditorium, Los Angeles, and the California Hardware Co. 120 tons for a city warehouse in Los Angeles. A number of small jobs have been let during the past ten days, aggregating about 500 tons.

Warehouse Business.—Buying is confined principally to small lots, although there is a somewhat better buying movement, locally, than there was a month or so ago. In the opinion of some observers buying is not keeping pace with consumption, or, in other words, stocks are being allowed to reach lower levels than is warranted by the present demand. Prices are, for the most part, fairly firm.

Merchant bars, $3.30 base, per 100 lb.; merchant bars, ⅝ in. and under, rounds, squares and flats, $3.80 base, per 100 lb.; soft steel bands, $4.15 base, per 100 lb.; angles, ⅞ in. and larger x 1½ in. to 2¾ in., inc., $3.30 base, per 100 lb.; channels and tees, ¾ in. to 2¾ in., inc., $3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, $3.15 base, per 100 lb.; tees, 3 in. and larger, $3.30 base, per 100 lb.; universal mill plates, ¼ in. and heavier, stock lengths, $3.30 base, per 100 lb.; spring steel, ¼ in. and thicker, $6.30 base, per 100 lb.; wire nails, $4 base, per 100 lb.

Cast Iron Pipe.—Recent lettings have been small and scattered. Prices are steady at $53 to $54, base, delivered in the San Francisco district. Only two good size contracts have been closed recently. The American Cast Iron Pipe Co. took 107 tons of 6 in. Class B for a natatorium in Richmond, Cal., and also 200 tons of 2 to 8 in. Class B for Aberdeen, Wash.

Coke.—Firmer price tendencies are considered likely by some of the local importers because of the increasing difficulty in obtaining shipments. Several of the English ovens have closed down temporarily. There is, however, a fairly good supply of foreign coke available at present and shipments are expected in April and May.

English beehive, $16 to $18 at incoming dock, and English by-product, $14 to $15; Birmingham, Ala., by-product, $19.50 to $20.50 delivered; Wise County, Va., beehive, $22 delivered.

Old Material.—Heavy melting steel is soft at $11, and there are apparently some interests willing to sell at a lower figure. There is no large amount of business being done, although frequent small lot sales are common. Prices in Los Angeles are weak and about $1 a ton less than in San Francisco.

Cleveland

Ore Price Reduction Causes Little Surprise—Weakness in Plates

CLEVELAND, April 7.—The reduction in Lake Superior ore prices has been the outstanding development of the week, but this occasioned little surprise, although the cut caused keen disappointment among some of the ore producers. The demand for steel holds up to about its recent volume. Specifications are fair, there is some small lot buying and some additional second quarter contracts have been closed for steel bars. Although most consumers took out about all the steel that they contracted for during the first quarter, few bought in excess of actual requirements and consequently consumers' stocks are said to be low. Automobile manufacturers with increased production are taking out steel in liberal quantities and the increased activity in this field is being reflected in the better demand of steel from the parts manufacturers.

The only important change in the price situation during the week is a weakening on plates of 2c. Up to the present week, the prevailing price for this territory has held firmly to 2.10c., Pittsburgh, although Ohio mills had to go to 2c. for Eastern business. Small lot orders are still being taken at 2.10c. Steel bars and structural material are firm at 2.10c., Pittsburgh. Screw stock is irregular, with 2.80c., Cleveland, now the maximum quotation. There is little activity in the structural field in this territory. The Mount Vernon Bridge Co. was low bidder for 3500 tons for an Ohio River bridge at Huntington, W. Va. A Louisville, Ky., shop has taken ten stills for the Standard Oil Co. of Ohio requiring 300 tons of plates. The Biggs Boiler Works Co. is low bidder for a riveted steel pipe line for Minneapolis requiring 800 tons of plates.

Pig Iron.—Pig iron sellers claim that the 50c. reduction in the base price of iron ore, which will result in a $1 a ton reduction in the cost of pig iron, has been largely discounted in the recent price reductions and that prices are not likely to go much, if any, lower. It is also believed that because ore prices are now settled and the coke situation has been cleared up by the wage reduction, there should be a stabilization of pig iron prices. Consumers have not been convinced that recent prices would hold. They have been buying small lots as needed and with considerable iron carried over there has been little contracting for the second quarter. The market continues quiet, with very little change in the price situation. The General Electric Co. has purchased 700 tons of foundry iron for its Erie works and a Dayton consumer is inquiring for 1000 tons. Another inquiry is from Altoona, Pa., for 500 tons. Cleveland furnaces are no longer asking above $22.50 for foundry iron except for car lots and would probably go lower on a round lot inquiry to shut out Valley iron. One Lake furnace is still on a $22 basis, but would go lower to points where it meets Valley competition.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$21.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	23.00
Southern fdy., sil. 1.75 to 2.25	$26.01 to 27.01
Malleable	23.00
Ohio silvery, 8 per cent	32.52 to 33.52
Standard low phos., Valley furnace	38.50

Iron Ore.—As fully explained elsewhere in this issue, iron ore prices have been established for 1925 at a reduction of 50c. a ton on the base grade of Mesabi non-Bessemer ore and somewhat larger reductions on Bessemer ores. At the same time the differential in the iron content guarantee between the two grades was eliminated. Ore shipments during March were 932,460 tons, as compared with 996,085 tons in March last year. The balance on Lake Erie docks April 1 was 5,096,204 tons, as compared with 6,062,589 tons on the same day a year ago.

Semi-Finished Steel.—The reduction to $35.50, Youngstown, on large billets and slabs has not been followed by any activity. Some consumers are still specifying against first quarter contracts for semi-finished steel. Small billets are now quoted at $37, Youngstown, or the same price as sheet bars.

Sheets.—There is little activity and some of the mills are anxious for orders, although others are comfortably filled with automobile business. Prices are holding to recent levels with a range of from 3.40c. to 3.50c. for black, 2.60c. to 2.70c. for blue annealed and 4.50c. to 4.60c. for galvanized sheets.

Wire Products.—Jobbers recently stocked up heavily with nails and wire with the expectation of higher prices. However, a price above $2.85 per keg on nails did not become generally effective. Keen competition has developed among distributors and to meet the situation Cleveland jobbers have reduced prices 20c. a keg on nails and $4 a ton on wire.

Bolts, Nuts and Rivets.—The demand for bolts and nuts continues fair. Manufacturers are operating their plants at from 65 to 70 per cent of capacity. Prices are firm. Small rivets are very irregular. While 70 and 10 per cent off list is the prevailing discount for small lots, 70, 10 and 10 per cent has not been the extreme discount on round lots.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 4c.; flats, squares and hexagons, 4.50c.; hoops and bands, 3.85c.; No. 9 annealed wire, $3.05 per 100 lb.; No. 9 galvanized wire, $3.50 per 100 lb.; common wire nails, $3.15 base per 100 lb.

Old Material.—The market is dull and shows a tendency to further weakness. Prices on borings and turnings, bushelings and compressed steel have declined 50c. a ton. A Cleveland mill has purchased a round lot of heavy melting steel at $17 delivered. The same grade brought $17.50 from a Valley district consumer. Mills are taking in blast furnace scrap in good volume, but there is little demand for open-hearth scrap.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$16.25 to $16.50
Rails for rolling	16.50 to 16.75
Rails under 3 ft.	18.75 to 19.00
Low phosphorus melting	19.00 to 19.50
Cast iron borings	13.00 to 13.50
Machine shop turnings	13.00 to 13.25
Mixed borings and short turnings	13.00 to 13.50
Compressed sheet steel	13.50 to 14.00
Railroad wrought	12.25 to 12.75
Railroad malleable	19.00 to 19.50
Light bundled sheet stampings	11.50 to 12.00
Steel axle turnings	14.50 to 14.75
No. 1 cast	18.25 to 18.75
No. 1 busheling	12.75 to 13.25
Drop forge flashings	12.25 to 12.50
Railroad grate bars	14.00 to 14.25
Stove plate	14.00 to 14.25
Pipes and flues	8.50 to 9.00

Detroit Scrap Market

DETROIT, April 7.—With automotive production at the highest point for the year the melt in the district has increased proportionately. Melters are buying only for current needs. Prices are the same as quoted a week ago with no strengthening influences in sight.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$14.00 to $15.00
Borings and short turnings	11.25 to 12.00
Long turnings	11.00 to 11.75
No. 1 machinery cast	17.50 to 18.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	12.25 to 13.25
Stove plate	15.50 to 16.50
No. 1 busheling	12.50 to 13.00
Sheet clipping	11.00 to 11.50
Flashings	12.50 to 13.00

The United Engineering & Foundry Co., Pittsburgh, announces the development of Model No. 2½ sheet leveler, with a capacity of 16 gage to ¼ in. hot steel plates. The drive in this machine is fully inclosed. It has 15 straightening rolls, staggered.

The Master Boiler Makers Association will hold its convention at the Sherman Hotel, Chicago, May 19 to 22, inclusive. Exhibits will be made by the supply men on the mezzanine floor of the hotel.

Philadelphia

Continued Price Weakness in Pig Iron, Scrap and Finished Materials

PHILADELPHIA, April 7.—Eastern plate mills are feeling the effects of the decline in steel buying to a greater degree than mills rolling other products. Pittsburgh and Ohio mills which sell in this territory, and particularly those which make a fairly wide variety of products, are getting a slightly better volume of orders. Reports which these sales offices receive from their mills also indicate that production in some of the lines other than plates is fairly well maintained. On blue annealed sheets, for example, an Ohio mill is unable to quote deliveries better than four or five weeks. All of the eastern plate mills, however, are operating below 50 per cent and current prices show no gains. Mills rolling shapes are somewhat better off, but here the situation varies a good deal according to the mill. Pig iron is weak and there are reports of $22, base, being shaded. The scrap market is also weaker and heavy melting steel has declined to a minimum of $15.

Pig Iron.—The outlook for pig iron for the next few months is so poor from the producers' point of view that plans for increased production in the district have been largely abandoned. The Delaware River Steel Co. will go ahead with its plan to blow in its furnace at Chester about the 15th or 20th of this month, but the Replogle Steel Co. will not put in blast the furnace that had been prepared for operation and the Reading Iron Co. will not bring in its furnace at Hokendauqua. It is likely that the Warwick furnace will be blown out soon, as it has a good-sized stock of iron. The blowing out of a furnace by the Alan Wood Iron & Steel Co., announced a week ago, has already reduced the amount of iron being produced for merchant sale. So far as can be learned, no more iron has been bought abroad in the last two or three weeks and there will soon be a lessening of imports at this port. Meanwhile, the price situation is weak and there are reports of sales at slightly less than $22, base, for foundry iron. A good many of the sales of the past week, however, were at $22 or $22.50, furnace, so it cannot be said that the market has definitely declined below the figures quoted a week ago.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rate varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$22.76 to $23.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.26 to 24.63
East. Pa. No. 1X	24.26 to 25.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	29.17 to 29.67
Virginia No. 2X, 2.25 to 2.75 sil.	29.67 to 30.17
Basic delivered eastern Pa.	22.75 to 23.25
Gray forge	23.00 to 23.50
Malleable	24.00 to 24.50
Standard low phos. (f.o.b. furnace)	25.00 to 26.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 26.00

Various grades of foreign pig iron are being offered at approximately the prices quoted below, all quotations being f.o.b. cars, Philadelphia:

Indian foundry iron, 2 to 2.50 per cent sil.	$23.50 to $24.00
Indian foundry iron, 2.25 to 3 per cent sil.	24.00 to 24.50
English foundry iron, 2 to 2.50 per cent sil.	23.00 to 23.50
Continental foundry, 2.50 to 3 per cent sil.	23.00 to 23.50
English low phos., copper free	26.00

Ferroalloys.—With almost no business being done, ferromanganese remains at $115, furnace or seaboard, for both domestic and foreign.

Billets.—There has not been enough inquiry for billets to test the market, so quotations remain nominally at $37 to $37.50, Pittsburgh, for rerolling quality and $5 higher for forging billets. While lower prices have appeared in the Pittsburgh and Youngstown districts, eastern mills do not appear to be willing to go lower.

Plates.—Eastern plate production has dropped below 50 per cent and current business is showing no gain. There is a fair number of orders, but they are for small lots. Notwithstanding the fact that all mills need orders badly, the price has been held at 2c., Pittsburgh.

Structural Shapes.—More inquiry for steel buildings has come out in the past week, but not much work is being closed. A good deal of the new work consists of apartment houses and the letting of contracts is frequently delayed on such work to permit of time for financing. The largest project is an apartment building at Seventeenth and Locust Streets, which will require 2800 tons. Plain material is quoted by some eastern mills at 2.15c., f.o.b. mill. This figures slightly less than 2c., Pittsburgh.

Bars.—While the market for steel bars remains firm at 2.10c., Pittsburgh, there has been an extension of some first quarter contracts which were entered at 2c. The impression has thus got abroad that some new business was being taken at 2c. The demand for bar iron is very light. The price is unchanged, namely 2.28c., Philadelphia.

Sheets.—Greater weakness has occurred in sheets than in any other products. Despite a fairly good demand for blue annealed, that product has declined in some cases to 2.50c., Pittsburgh. On black, 3.40c. has been shaded and 4.60c. on galvanized has also been cut at least $1 a ton by some mills.

Warehouse Business.—Local warehouses have reduced prices on sheets $3 per 100 lb. This makes blue annealed 3.70c., black 4.70c. and galvanized 5.85c., all base prices. For local delivery we quote as follows:

Soft steel bars and small shapes, 3.20c.; iron bars (except bands), 3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.10c.; tank steel plates, ⅛ in., 3.25c.; blue annealed steel sheets, No. 10 gage, 3.70c.; black sheets, No. 28 gage, 4.70c.; galvanized sheets, No. 28 gage, 5.85c.; square, twisted and deformed steel bars, 2.85c.; structural shapes, 3.10c.; diamond pattern plates, ¼-in., 5.30c.; ⅛-in., 5.50c.; spring steel, 5c.; round cold-rolled steel, 4.15c.; squares and hexagons, cold-rolled steel, 4.65c.; steel hoops, 4.20c. base; steel bands, No. 12 gage to ¼ in., inclusive, 3.95c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 7c.

Old Material.—Demand from mills for steel scrap is almost non-existent and the little business that is being done consists mostly of buying by brokers for delivery on contracts. On some of this buying, the best price obtainable for melting steel is $15, delivered. Other grades of scrap have also declined. The market is very weak and there is no sign of a turn for the better.

We quote for delivery consuming points in this district as follows:

No. 1 heavy melting steel	$15.00 to $16.00
Scrap rails	15.00 to 16.00
Steel rails for rolling	18.50 to 19.00
No. 1 low phos. heavy 0.04 and under	20.00 to 21.00
Couplers and knuckles	19.00 to 19.50
Rolled steel wheels	19.00 to 19.50
Cast-iron car wheels	18.00 to 18.50
No. 1 railroad wrought	18.00 to 18.50
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	13.00
Mixed borings and turnings (for blast furnace use)	12.00 to 12.50
Machine shop turnings (for steel works use)	13.00
Machine shop turnings (for rolling mill use)	13.50
Heavy axle turnings (or equivalent)	14.50 to 15.50
Cast borings (for steel works and rolling mill)	13.50 to 14.00
Cast borings (for chemical plants)	18.00 to 18.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel plants)	16.00 to 16.50
Railroad grate bars	13.50
Stove plate (for steel plant use)	13.50
Wrought iron and soft steel pipes and tubes (new specifications)	16.00
Shafting	21.00 to 22.00
Steel axles	22.00 to 23.00

Imports.—Only 2204 tons of pig iron came in at Philadelphia last week, and of this, 1500 tons was from Germany and 704 tons from India. Structural steel continues to come from Belgium, last week's receipts amounting to 948 tons, and bars from Luxemburg totaled 100 tons. Iron ore from Algeria was 6000 tons and manganese ore from British Africa amounted to 2000 tons. Four hundred tons of English ferromanganese came in.

Falcon Bronze Co. Purchases Lumen Bearings Co.

YOUNGSTOWN, April 7.—The Falcon Bronze Co., this city, has purchased the Lumen Bearings Co., operating a plant in Youngstown and owning the new process copper of Pittsburgh. Stockholders of the Lumen Bearings Co. will meet April 18 to ratify the sale.

The Lumen company's Youngstown plant is comparatively new and modern, with a capacity of about 2,000,000 lb. of finished bronze castings per year, while the Pittsburgh property has a capacity of 1,000,000 lb. of copper castings. The Falcon company has a yearly capacity of about 2,000,000 lb. of castings. G. A. Doeright, president of the Falcon Co., states that operations will be largely concentrated in Youngstown. Both companies cater to the iron and steel industry principally.

The Lumen Bearings Co., with a capitalization of $250,000, will be dissolved. W. H. Barr of Buffalo is its president and Kester Barr secretary and manager.

It is likely the Falcon company will eventually abandon its present plant on South Phelps Street in Youngstown and take over that of the Lumen company on Poland Avenue.

Pennsylvania Railroad to Spend $100,000,000

Definite announcement of the plans of the Pennsylvania Railroad for extensions and improvements at Philadelphia and elsewhere on its lines was made by Samuel Rea, president, in his annual report issued on Monday. About $100,000,000 will be expended in the next five years and fully half of this will be devoted to terminal facilities in Philadelphia. A new station will be built to replace the present Broad Street Station, this station to be located near the present West Philadelphia station, from which passengers will be transported to the center of the business district by subway.

Amalgamated Association Meeting

The annual convention of the Amalgamated Association of Iron, Steel and Tin Workers will be held this month in Pittsburgh, at which the association will consider requests of the various local organizations for improved working conditions and changes in the tonnage rates. These requests will be formulated into a program which will be presented to manufacturers in June, at Atlantic City, at the yearly wage conference. In the sheet and tin plate division the scale year for the twelve months ending June 30 will be the second under which tin plate workers' rates are adjusted on the basis of black sheets. During the first year the new arrangement was in effect the workers gained about 10 per cent over what they would have received under the former plan. Due to recent weakness in the sheet market, however, affected employees are averaging about what they would have been paid under the old tin mill basis.

Publicity: Some of the Things It Is and Is Not

Several addresses delivered by Ivy L. Lee have been collected into a booklet of 64 pages under the title "Publicity." Some of the questions covered are represented by three addresses reprinted under the titles "Publicity and Propaganda," "Answers to Questions About Publicity" and "Publicity as Applied to Public Service Corporations." The answers to questions consist mainly in making distinction between proper propaganda and improper propaganda.

Sound public relations are considered the first necessity in the policies of public service corporations. Cultivation should be through newspaper advertising space and the use of items of human interest. A special warning is given: "Avoid lawyers, with their legalistic minds."

The distinction between news and advertising is illustrated by the differences between professional baseball and automobiles. The former is just as commercial as the latter, yet the newspapers give much free space to baseball, but for the most part require the automobile builders to pay for advertising space when they wish to get before the public the facts concerning their developments. The baseball matters are legitimate news, for which newspaper readers are willing to pay the paper. The same is not true of the automobile.

World Shipbuilding Shows Decline

The volume of world shipbuilding orders is less than at the end of 1924 and near the low mark of 1923, although increases in tonnage contracted for are shown by the United States, Germany and Danzig, Italy and Japan, says a statement just issued by Lloyd's Register of Shipping, covering returns from all maritime countries for the quarter ended March 31 last.

A marked continuation of the growth in motorship building is one of the most interesting features of the return. Lloyd's Register points out that, whereas a year ago 28 per cent of the world's shipping under construction was composed of vessels equipped with internal combustion engines, and at the end of the year the figure had advanced to 37 per cent, a new peak of 42 per cent is shown by the returns for the quarter just ended.

The growth has been greatest in the smaller shipbuilding countries, for while the proportion of Great Britain's and Ireland's total work representing motor vessels has increased from 22 to 30 per cent in the past year, that for the other maritime countries has grown from 35 per cent to 54 per cent in the same period. In other words, while less than a third of the total British output is now motor tonnage, the other nations combined are building more motor tonnage than steam and sailing ships put together.

Record Car Loadings

WASHINGTON, April 7.—The greatest number of cars on record for the season loaded with revenue freight was the showing of the first three months of this year, according to the car service division, American Railway Association. The total for the period from Jan. 1 to March 28 was 11,765,235 cars. This exceeded by 177,224 cars the corresponding period of 1924, which had marked the previous high record for the season.

Ore loading for the week of March 28 totaled 12,884 cars, an increase of 734 cars over the preceding week but 965 cars under the same week last year and 2550 cars under the same period two years ago. Coal loading totaled 140,889 cars, an increase of 1526 cars over the preceding week but 13,760 cars under the same week last year. Coke loading totaled 12,304 cars, 242 cars above the preceding week but 214 cars under the corresponding period in 1924. All districts reported increases in loading of all commodities over the corresponding week last year, except the eastern and Allegheny.

James H. Nutt of Youngstown, secretary of the bar iron and sheet and tin plate manufacturers' associations dealing with employees under the sliding scale wage agreement, is believed to be the only member of the Amalgamated Association of Iron, Steel and Tin Workers when it was organized 50 years ago, still living. At that time Mr. Nutt was a member of the heaters' and rollers' local at Pittsburgh. Though he has represented the manufacturers at the bimonthly and yearly wage settlements for many years, he has always retained his affiliation with the Amalgamated Association.

The Central Steel Co. reports net income for 1924 of $2,899,824 after charges. This compares with $2,006,953 in the preceding year. Gross earnings were nearly 25 per cent greater than in 1923. Surplus last year stood at $1,426,573 against $650,468 in 1923.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....2c. to 2.10c.
F.o.b. Chicago, base, per lb.....2.30c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2.10c.
F.o.b. Chicago, base, per lb.....2.30c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb.....2.10c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.20c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb....2.10c.
Rail steel bars, f.o.b. Chicago district mills, base, per lb.2.10c.
Common iron bars, f.o.b. Chicago, base, per lb.....2.10c.
Refined iron bars, f.o.b. P'gh mills, base, per lb..3c. to 3.10c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base, per lb., Pittsburgh.....2.40c.
Bands, base, per lb., Pittsburgh.....2.40c.
Strips, 6 in. and narrower, base, per lb., Pittsburgh....2.40c.
Strips, wider than 6 in., base, per lb., Pittsburgh.....2.20c.
Strips, base, per lb., Chicago.....2.55c. to 2.60c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb. 2.70c. to 2.80c.
Screw stock and shafting, f.o.b. Chicago, base, per lb....2.80c.
Screw stock, base, per lb., Cleveland.....2.75c. to 2.80c.
Shafting, ground, f.o.b. mill, base, per lb.....3.20c.
Strips, f.o.b. P'gh mills, base, per lb.....4c. to 4.15c.
Strips, f.o.b. Cleveland mills, base, per lb.....4c. to 4.15c.
Strips, f.o.b. Chicago mills, base, per lb.....4.30c. to 4.45c.
Strips, f.o.b. Worcester mills, base, per lb.....4.15c. to 4.30c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg $2.85
Galvanized nails, 1-in. and longer, base plus..... 2.25
Galvanized nails, shorter than 1 in., base plus..... 2.50
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.60
Annealed fence wire, base, per 100 lb..... 2.75
Spring wire, base, per 100 lb..... 3.60
Galvanized wire, No. 9, base, per 100 lb..... 3.20
Galvanized barbed, base, per 100 lb..... 3.55
Galvanized staples, base, per keg..... 3.55
Painted barbed wire, base, per 100 lb..... 3.30
Polished staples, base, per keg..... 3.30
Cement coated nails, base, per count keg..... 2.15
•Bale ties, carloads, to jobbers....75, 15 and 5 per cent off list
•Bale ties, carloads to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....$67.00

Chicago district mill prices are $2 per ton above the foregoing and Chicago delivered prices are $3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

•F.o.b. Cleveland.

Sheets

Blue Annealed

(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....2.60c. to 2.70c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills 2.70c. to 2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.40c. to 3.50c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.60c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh.....4.50c. to 4.60c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....4.70c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.40c. to 3.50c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.60c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. mill.....4.40c. to 4.50c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill.....4.90c.

Tin Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills $5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.20	20-lb. coating I. C.	$15.50
8-lb. coating I. C.	11.50	25-lb. coating I. C.	17.00
15-lb. coating I. C.	14.35	30-lb. coating I. C.	18.35
		40-lb. coating I. C.	20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb..$2.60
Large, f.o.b. Chicago, base, per 100 lb..... 2.75
Small, f.o.b. Pittsburgh.....70, 10, 5 per cent off list
Small, Cleveland ....70 and 10 to 70, 10 and 10 per cent off list
Small, Chicago .....70 to 70 and 10 per cent off list

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....$43.00
Rails, light, billet, base, per lb.....1.80c.
Rails, light rail steel, base, per lb.....1.65c. to 1.75c.
Spikes, $\frac{5}{16}$ in. and larger, base, per 100 lb.....$2.80 to $3.10
Spikes, ½ in. and smaller, base, per 100 lb..... 3.10 to 3.40
Spikes, boat and barge, base, per 100 lb..... 3.25
Track bolts, all sizes, base, per 100 lb..... 3.90 to 4.25
Tie plates, per 100 lb..... 2.35 to 2.50
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Steel B'lack	Steel Galv.	Iron Inches	Iron B'lack	Iron Galv.
⅛	45	19½	⅛ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2½ per cent beyond the above discount.

NOTE—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1¾ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ and 1½ in.	52	3¼ to 3½ in.	47
1¾ in.	36	4 in.	50
2 and 2¼ in.	31	4½, 5 and 6 in.	46
2½ and 2¾ in.	39		

Hot-Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $3 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list
Carbon 0.30 to 0.40 base.....83 to 85 per cent off list
Plus usual differentials and extra for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	14¼	2¼-in. O.D. 10 gage	18
2-in. O.D. 11 gage	15	3-in. O.D. 7 gage	33
2-in. O.D. 10 gage	16	1½-in. O.D. 9 gage	15
2¼-in. O.D. 12 gage	16	5¾-in. O.D. 9 gage	50
2¼-in. O.D. 11 gage	17	5½-in. O.D. 9 gage	52

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 51.50 per cent iron	$4.55
Old range non-Bessemer, 51½ per cent iron	4.40
Mesabi Bessemer, 51.50 per cent iron	4.40
Mesabi non-Bessemer, 51.50 per cent iron	4.25
High phosphorus iron, 51.50 per cent	4.15

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus	44c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$9.00 to $11.00
Chrome ore, Indian basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$3.15 to $3.25
Foundry coke, f.o.b. Connellsville prompt	4.00 to 4.50
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.00
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.40 to 1.50
Gas slack, f.o.b. W. Pa. mines	1.50 to 1.60

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	115.00
Ferrosilicon, 50 per cent, delivered	$82.50 to 85.00
Ferrosilicon, 75 per cent	145.00 to 147.50
Ferrotungsten, per lb. contained metal	90c. to 95c.
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....$33.00
Spiegeleisen, domestic, 16 to 19 per cent.....32.00
Ferrosilicon, Bessemer, 10 per cent; $39.50; 11 per cent, $42; 12 per cent, $44.50; electric furnace ferrosilicon, 10 to 11 per cent, $38; furnace with an advance of $1 per unit for material above 10 per cent.
Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $30.50; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	$18.00 to $19.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	19.00 to 20.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton	18.00

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	45.00 to 48.00	38.00 to 43.00
Ground fire clay, per ton		6.50 to 7.50
Silica Brick:		
Pennsylvania		40.00
Chicago		49.00
Birmingham		54.00
Silica clay, per ton		8.00 to 9.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		48.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland and Chicago)

Machine bolts, small rolled threads..60 and 10 per cent off list
Machine bolts, all sizes, cut threads, 50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads, 50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes..50 and 10 per cent off list
Eagle carriage bolts.....65 and 10 per cent off list
Lag bolts.....60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in., 45, 10 and 5 per cent off list
Larger and longer sizes.....45, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square.....4c. off list
Hot-pressed nuts, blank or tapped, hexagons....4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped.4.10c. off list
Bolt ends with hot pressed nuts..50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts...45, 10 and 5 per cent off list
Washers*.....6c. to 5.50c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:
⅜ in. and smaller, U. S. S.....80, 10 and 5 per cent off list
⅝ in. and larger, U. S. S.....75, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10 and 5 per cent off list
S.A.E., ⅝ in. and larger.....75, 10, 10 and 5 per cent off list
Stove bolts in packages.....80 and 5 per cent off list
Stove bolts in bulk.....80 and 5 and 2½ per cent off list
Tire bolts.....50, 10 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

	Per 100 Net S. A. E.	Per 100 Net U. S. S.		Per 100 Net S. A. E.	Per 100 Net U. S. S.
½-in.	$0.44	$0.44	⅞-in.	$2.35	$2.40
⅝-in.	.515	.515	1-in.	3.60	3.60
¾-in.	.62	.66	1-in.	5.55	5.80
⅞-in.	.79	.90	1⅛-in.	8.90	8.90
1-in.	1.01	1.05	1¼-in.	12.60	13.10
1-in.	1.28	1.42	1⅜-in.	18.35	18.35
1⅛-in.	1.70	1.73	1½-in.	21.00	21.60

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws.....80, 10 and 5 per cent off list
Milled standard set screws, case hardened, 80 and 10 per cent off list
Milled headless set screws, cut thread.80 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread, 80, 10, 10 and 5 per cent off list
Upset hex. cap screws, S. A. E. thread, 80, 10, 10 and 5 per cent off list
Upset set screws.....80, 10 and 10 per cent off list
Milled studs.....75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$35.50
Forging billets, ordinary carbons	$40.50 to 41.00
Sheet bars	37.00
Slabs	35.50
*Wire rods, common soft, base, No. 5 to ⅜-in.	43.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2c. to 2.10c.
Skelp, sheared, per lb.	2c. to 2.10c.
Skelp, universal, per lb.	2c. to 2.10c.

*Chicago mill base is $50. Cleveland mill base, $48.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100*(1¼% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3½% Nickel)	4.50 to 4.75
2500 (5% Nickel)	6.00 to 6.25
3100 (Nickel Chromium)	3.50 to 3.65
3200 (Nickel Chromium)	5.50
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.50 to 6.75
5100 (Chromium Steel)	3.50
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.25 to 4.50
6100 (Chromium Vanadium spring steel)	4.25
9250 (Silicon Manganese spring steel)	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4.25 to 4.50
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

FABRICATED STEEL BUSINESS

Bookings Nearly 21,000 Tons and Inquiries Call for 42,000 Tons

The tonnage of bookings of fabricated steel work reported to THE IRON AGE was nearly 21,000 tons, or as much as for the preceding week. Nearly 40 per cent was for public work and 30 per cent for business and industrial buildings. No less than 42,000 tons was put under inquiry, or twice the weekly average of March. Among awards were the following:

Fifth Avenue Coach Co., addition to garage on 132nd Street, New York, 1000 tons, to Levering & Garrigues Co.

Apartment building on Glenwood Avenue, Jersey City, N. J., 700 tons, to Fagan Iron Works.

Apartment building, 45 Fifth Avenue, New York, 500 tons, to Easton Structural Steel Co.

Telephone building on Fourteenth Avenue, Brooklyn, 300 tons, to Eidlitz & Ross.

Theater, Hempstead, Long Island, 300 tons, to Easton Structural Steel Co.

Girls' Catholic High School, New York, 1200 tons, to A. E. Norton, Inc.

Harriman National Bank Building, Fifth Avenue at Forty-third Street, addition, 700 tons, to Post & McCord.

Bridge over Monongahela River at Masontown, Pa., 1700 tons, Independent Bridge Co. low bidder.

Bridge over Ohio River at Huntington, W. Va., 3500 tons, Mount Vernon Bridge Co. low bidder.

E. T. Slider, New Albany, Ind., six barges, 900 tons, to Jones & Laughlin Steel Corporation.

Cotton mill, Opelika, Ala., 300 tons, to McClintic-Marshall Co.

Advancement League Building, Springfield, Mass., 170 tons, to Providence Iron & Steel Co.

City of Chicago, north half of Roosevelt Road East Viaduct, 960 tons, to Milwaukee Bridge Co.

Illinois Central, beam spans and plate girders, Riverdale, Ill., 380 tons, and beam spans, Harvey, Ill., 240 tons, or a total of 620 tons, to American Bridge Co.

Union Pacific Railroad, bridges over Mallad and Big Wood Rivers, 532 tons, to American Bridge Co.

State University of Iowa, Iowa City, medical laboratory, 276 tons, to unnamed fabricators.

Viaduct over Elgin, Joliet & Eastern Tracks at Cass Street, Joliet, Ill., 183 tons, to American Bridge Co.

Nurses' Home, Detroit, Mich., 1275 tons, to Whitehead & Kales.

Grand Avenue Theater, Oakland, Cal., 280 tons, to Judson Mfg. Co.

Paraffine Companies, Inc., plant buildings, Los Angeles, 800 tons, to Moore Dry Dock & Shipbuilding Co.

Olympia Auditorium, Los Angeles, 500 tons, to Friedman & Son.

Apartment house, Pine and Stockton Streets, San Francisco, 165 tons, to Golden Gate Iron Works.

Mossdale Bridge, Stockton, Cal., 400 tons, Minneapolis Steel & Machinery Co., low bidder.

General Petroleum Co., San Francisco, 400 tons of plates and 240 tons of channels to unnamed fabricator.

Tacoma, Wash., pipe line, 750 tons, to Willamette Iron & Steel Co.

U. S. Engineers, Portland, Ore., pontoon pipe line, 130 tons, divided among Coast Culvert & Flume Co., Portland; Smith & Watson Iron Works, Portland, and Bremerton Navy Yard.

Florida East Coast Railroad, three bridges, 600 tons, to Virginia Bridge & Iron Co.

Standard Oil Co., tank work at Charleston, S. C., 400 tons, to an unnamed fabricator.

Pennsylvania Railroad, bridge at Louisville, Ohio, 250 tons.

Atlantic Coast Line, four turntables, 300 tons, to American Bridge Co.

Bridge at Quinton, N. J., 125 tons, to Phoenix Bridge Co.

Lincoln Alliance Bank, Rochester, N. Y., 1500 tons, to McClintic-Marshall Co., last week reported as awarded to Genesee Bridge Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Famous Players Corporation, theater and office building on Broadway, between Forty-third and Forty-fourth Streets, New York, 6000 tons.

Clinchfield Railroad, shops at Erwin, Tenn., 700 tons.

Delaware, Lackawanna & Western Railroad, bascule bridge at Buffalo, 500 tons.

Theater, Camden, N. J., 300 tons.

Garage, Sansom Street, Philadelphia, 700 tons.

Erie Railroad, two bridges, 300 tons.

Aberfoyle Mfg. Co., Chester, Pa., plant addition, 700 tons.

Brooklyn Trust Co., Brooklyn, 600 tons.

Standard Oil Co. of New Jersey, three oil tanks at Bayonne, N. J., 1200 tons.

Apartment building, Seventeenth and Locust Streets, Philadelphia, 2800 tons.

First Trust & Savings Bank, Miami, Fla., 400 tons.

Boys' Catholic High School, Philadelphia, 900 tons.

Eagle Lock Co., Terryville, Conn., warehouse, 300 tons.

Gold Dust Corporation, Baltimore, plant addition, 400 tons.

Hotel Utica, Utica, N. Y., addition, 300 tons.

Millinery Trade Building, Sixth Avenue at Thirty-ninth Street, New York, 2500 tons.

Bing & Bing, four theaters in Times Square district, New York, about 1500 tons total.

Mercy Hospital, Buffalo, 700 tons.

Columbus, Ohio, power house, 2000 tons.

State Capitol, Lincoln, Neb., 2000 tons.

Ambassador Theater, St. Louis, 5000 tons.

Viaduct, Milwaukee, 1000 tons.

Grand Trunk Railway, Lansing-Charlotte grade separation, 250 tons.

Pacific Gas & Electric Co., four towers at Antioch, Cal., 900 to 1000 tons.

U. S. Government hangars, Pearl Harbor, H. I., 350 tons.

Theater, Broadway and Tenth Street, Oakland, Cal., 300 tons.

Pacific Telephone & Telegraph Co., San Diego, 400 tons.

Apartment house, 2110 Pacific Avenue, San Francisco, 350 tons.

Pantages Theater, Market, Hyde and Grove Streets, San Francisco, 800 tons.

San Rafael, Cal., pipe line, bids May 1, 1200 tons.

Vista Irrigation District, San Diego County, 18,700 ft., 543 to 983 tons, bids taken April 3.

Vancouver pipe line, 14 miles, bids taken in April, 330 to 4300 tons.

Reading Railroad, grain elevator at Port Richmond, Philadelphia, 1500 tons.

Odd Fellows' Home, Harrisburg, Pa., 200 tons.

RAILROAD EQUIPMENT BUYING

Car Purchases Total 4200 and 10 Locomotives Bought

Buying of the week included 4222 cars, 50 car bodies, 280 center constructions and 10 locomotives. The total was swelled by the orders of the Southern Pacific for 3400 cars. Little new inquiry appeared. The chief items are the following:

The Southern Pacific Railroad has ordered 3400 freight cars as follows: 2000 50-ton single-sheathed box cars and 200 automobile cars from the Standard Steel Car Co.; 1000 50-ton drop-bottom gondolas from the Tennessee Coal, Iron & Railroad Co.; 200 50-ton oil tank cars from the Pennsylvania Car Co.

The Carnegie Steel Co. has ordered 50 gondola car bodies from the Pressed Steel Car Co.

The New York Central has ordered 500 refrigerator cars from the Merchants Despatch Transportation Co. and 100 dump cars from the Clark Car Co., and is inquiring for 2 baggage and mail and 10 passenger and baggage cars.

The Chicago & Western Indiana has ordered 280 steel center constructions for cars from the Pullman Car & Mfg. Co.

The Bethlehem Steel Corporation has ordered 200 mine cars from the American Car & Foundry Co.

The Hooker Electro-Chemical Co., Niagara Falls, N. Y., has bought 4 tank cars from the American Car & Foundry Co.

The Koppel Industrial Car Equipment Co., Peoples Gas Building, Chicago, has received an order from the U. S. Gypsum Co. for its Fort Dodge, Iowa, plant, for 12 standard gage automatic air dump cars, 16 cu. yd. capacity, and from A. Guthrie & Co., St. Paul, an order for 6 cars of the same type but with 20 cu. yd. capacity.

The Missouri-Kansas-Texas, which recently inquired for 1800 cars, has withdrawn its inquiry for 300 gondola cars.

The Rock Island has placed 10 locomotives of the 2-10-2 type with the American Locomotive Co.

The Grand Trunk placed 25 caboose underframes with the Pressed Steel Car Co.

The Wabash is reported to be contemplating entering the market for cars.

The Florida East Coast is inquiring for 15 baggage cars in addition to the 15 coaches recently reported.

The Gary Tube Co. is inquiring for 8 all steel side dump cars and 4 flat cars.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
April	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
1.....	13.75	13.37½	52.50	8.40	8.05	7.47½	7.12½
2.....	13.75	13.37½	51.62½	8.35	8.00	7.40	7.05
3.....	13.75	13.37½	51.37½	8.35	8.00	7.42½	7.07½
4.....	13.75	13.25	....	8.35	8.00	7.42½	7.07½
6.....	13.75	13.25	50.50	8.25	7.95	7.45	7.10
7.....	13.75	13.37½	51.30	8.20	7.87½	7.45	7.10

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, April 7.

The markets continue lifeless, with the price tendency lower in most of them. Copper is marking time and has changed but little from last week. Buying of tin is moderate, while prices have declined sharply. Lead is again lower, with a fair business moving. Conditions in the zinc market are practically unchanged from the week previous.

Copper.—Electrolytic copper has been alternately firm and weak, with the latter the prevailing tendency. The market here has been following that in London to a large extent. A few days ago the tendency was higher, but lower offerings in London depressed prices here. Yesterday and today, however, there has been a much better tone, with considerable interest manifested both for domestic and foreign consumption. Sales were made for export today at 13.50c., f.a.s., against 13.40c. to 13.45c. yesterday. While electrolytic copper was obtainable yesterday at 13.50c., delivered in the Valley, the minimum today is 13.62½c. Sellers report a fairly large potential demand as soon as consumers regard the market as fairly stabilized. Lake copper is quoted nominal at 13.75c., delivered.

Tin.—The market is quiet and considerably lower, due largely to the speculative activity of dealers. In the week about 1100 to 1200 tons changed hands, with dealers more active than consumers. Despite the fact that statistics for March were favorable, the price tendency has been downward and depression has been more or less rampant. Opinion is divided as to whether prices have reached bottom, it being admitted that 50c.-tin is not cheap. A search for unfavorable conditions, however, is not very successful. Statistics for March show the United States visible supply to be about 9500 tons which, with 1500 to 2000 tons to come, would make the supply for April and May about 11,500 tons. One importer points out that, with consumption at 6000 tons per month, a shortage of tin and premium prices would be the outcome by the end of May. He also points out that, with deliveries for the first quarter of this year nearly 3200 tons more than last year and with 1,200,000 fewer boxes made in the same period this year than last, representing a tin consumption 800 tons less, or, in other words, less tin used and more tin received, an increase in the invisible supply of nearly 4000 tons would be indicated. Adding this to the United States visible supply the total would amount to nearly 16,000 tons for April and May, indicating the probability that consumers are better covered than realized. Spot Straits tin today was quoted at 51.30c., New York, with a fair business done. Prices in London were about £3 per ton less than a week ago, with spot standard quoted at £232, future standard at £235 5s. and spot Straits at £238 10s. The Singapore price yesterday was £237 10s. Arrivals thus far this month have been 1090 tons, with 3718 tons reported afloat.

Lead.—The American Smelting & Refining Co. reduced its contract price today from 8.50c. to 8.25c., New York. Independent sellers were practically on that basis yesterday. Quotations in the outside market are 7.87½c., St. Louis, or 8.20c., New York. The market is quiet and slowly sagging, with demand only fair.

Zinc.—This market is firm but exceedingly quiet, with very little new business reported. In prices it has been following the London market more or less, being up one day and down the next. Prime Western zinc is quoted today for early delivery at 7.10c., St. Louis, or 4.75c., New York.

Nickel.—Wholesale lots of shot and ingot nickel are quoted at 31c. to 32c. per lb., with electrolytic nickel available at 38c.

Antimony.—Chinese metal in wholesale lots for spot and early delivery is quoted at 13.75c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted unchanged at 27c. to 28c. per lb., delivered.

Old Metals.—Business is very quiet and prices are lower. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	13.00
Copper, heavy and wire	12.25
Copper, light and bottoms	10.50
Heavy, machine composition	9.75
Brass, heavy	8.00
Brass, light	7.00
No. 1 red brass or composition turnings	9.50
No. 1 yellow rod brass turnings	8.75
Lead, heavy	7.00
Lead, tea	5.50
Zinc	4.50
Cast aluminum	19.00
Sheet aluminum	19.00

Chicago

APRIL 7.—Trade in the metals is exceedingly light and prices of tin and lead have receded still further. Among the old metals there are few price changes outside of a decline in certain grades of copper. We quote, in carload lots: Lake copper, 14c.; tin, 52c.; lead, 8c.; zinc, 7.15c.; in less than carload lots, antimony, 16c. On old metals we quote copper wire, crucible shapes and copper clips, 10.25c.; copper bottoms, 9c.; red brass, 8c.; yellow brass, 7c.; lead pipe, 6.50c.; zinc, 4c.; pewter, No. 1, 28c.; tin foil, 30c.; block tin, 38c.; all buying prices for less than carload lots.

RAIL ORDER TO JAPANESE MILL

Manchuria Awards 15,000 Tons to Government Works—American Importers Active

NEW YORK, April 7.—Inquiry from foreign markets continues light. Chinese buying is largely confined to an occasional order for galvanized wire shorts. Japanese merchant buying is almost at a standstill. Black sheet and tin plate quotations of American mills are unchanged at $91 to $92 for sheets and $5.90 to $6 per base box for tin plate. Purchasing by large companies, particularly the railroads of Japan, continues in normal volume.

The South Manchuria Railway Co., announced several weeks ago as having an inquiry in preparation, asked for prices a few days ago on 100 miles of 100-lb. rails and accessories, but before quotations were received from the mills in the United States, award was made to the Imperial Steel Works in Japan. The Government works has been quoting 103 yen per ton with a concession of 1 yen per ton on orders of more than 10 miles and 2 yen on more than 50 miles of rails. It is believed by exporters in the United States that some concession from this price was made to secure the business.

Importers in the United States continue active, but a majority of the business involves small lots principally of structural steel, although lately reinforcing bars have risen to an important place in sales. One New York importer is reported to have booked an order with a distributor in Galveston, Tex., for 1000 tons of deformed steel bars. In most instances the material furnished is of Belgian manufacture, with a fair degree of activity evident on the part of French mills. German prices are high and only an occasional sale of German steel to American consumers is possible at present.

Sheet metal workers in the Youngstown district have been granted a wage increase for the ensuing year to $1.25 per hour, from $1.15.

PERSONAL

Fred C. Schreiber has joined the Chicago sales force of Manning, Maxwell & Moore, Inc. He was formerly identified with the Stocker-Rumely-Wachs Co.

George H. Fristoe has been appointed factory sales representative of the Ransom Mfg. Co., Oshkosh, Wis., manufacturer of grinding machines for snagging or tool grinding.

Lewis Johnson, manager of the cold-rolled strip department, American Steel & Wire Co., Chicago, is convalescing at his home at Evanston, Ill., following a recent operation for appendicitis.

R. T. Palmer, treasurer Joy Mfg. Co., Franklin, Pa., has been appointed general manager of the company's subsidiary, the Joy Machine Co.

Algot J. E. Larson, for the past ten years general superintendent of the Art Metal Construction Co., Jamestown, N. Y., manufacturer of metal office, bank and vault furniture, has been promoted to general works manager and assistant to the president.

J. W. Porter, formerly vice-president and general manager of the Alabama Co., has been elected vice-president of the Hammond Iron Co., successors to the Hammond-Byrd Iron Co., Birmingham, Ala., and is actively in charge of coal, coke and pig iron. His experience covers 25 years' activity in the coal and iron industry.

L. F. Nagle, formerly head of the Nagle Steel Co., Pottstown, Pa., has been appointed assistant general manager of sales of the Central Iron & Steel Co., Harrisburg, Pa., having represented the Central company for some time as salesman in the central Pennsylvania territory.

C. E. Stevens has been promoted from manager of the central station division of the Westinghouse Electric & Mfg. Co. to district manager of the company in New York, succeeding A. E. Allen, who has been appointed general manager of the Westinghouse Lamp Co.

Henry C. Pierle, secretary R. K. LeBlond Machine Tool Co., Cincinnati, has just returned from a highly successful business trip to Europe.

Rush N. Harry has been appointed assistant general treasurer of the New York Central Railroad with headquarters in New York. He has been treasurer of the Cleveland, Cincinnati, Chicago & St. Louis Railroad for several years. A. P. Burke will succeed Mr. Harry in this position. His headquarters will be in Cincinnati.

R. J. Courtenay, formerly associated with the Bethlehem Steel Co., has been made assistant to C. R. Brown, purchasing agent, Saco Lowell Shops, Boston.

R. E. Brakeman has resigned as chief engineer for the Otis Steel Co., Cleveland, with which he has been connected several years.

George C. Hayes, 225 Indiana Terminal Warehouse Building, Indianapolis, has been appointed district manager for the Elwell-Parker Electric Co., Cleveland, for the Indianapolis territory. The company has appointed the Vulcan Iron Works Co., 1400 West Colfax Avenue, Denver, as district representative for the territory contiguous to Denver.

Dr. W. F. Durand, president of the American Society of Mechanical Engineers, was the honor guest at a dinner given by the Cleveland section of the society at the Hotel Cleveland, Cleveland, April 6. After the dinner Dr. Durand gave an address on "The Engineering Profession—Its Antiquities and Obligations."

Daniel H. Meloche of the Holley Carburetor Co., Detroit, has been honored by the Franklin Institute, Philadelphia, which has awarded him the Edward Longstreth medal for his invention embodied in long life molds. He perfected a commercial process for pouring molten metal into metal molds, which was described in detail in THE IRON AGE, May 3, 1923. Mr. Meloche, who is but 36 years of age, is probably the youngest man ever to receive this medal and is one of approximately 160 to obtain this honor. The Holley Carburetor Co. has made more than 2,000,000 carburetor castings in the last two years in these long-life molds.

Robert W. Simpson, Norristown, Pa., has been appointed superintendent of the upper plate mills for the Central Iron & Steel Co., Harrisburg, Pa. L. F. Nagle, Pottstown, Pa., becomes assistant general sales manager.

A. J. Gillespie has been appointed sales representative in the Cleveland office by the Wollmar Engineering Corporation, New York, for N. K. A. ball and disk bearings. He was for over six years in the ball bearing industry in Ohio, for the last three years in antifriction engineering in his own business and president of the A. J. Gillespie Co. His headquarters will be at 8500 Lake Avenue, Cleveland.

C. H. Overkamp, resident manager for Western Manning, Maxwell & Moore, Inc., has moved his sales office from 40 Fremont Street to the Rialto Building, New Montgomery and Mission Streets, San Francisdo.

George W. Eckhardt, well known in the hardware trade, has resigned as general manager of sales of the Miller Lock Co., Philadelphia, to become manager of sales of the hardware division, Henry Disston & Sons, Philadelphia. Mr. Eckhardt was formerly with the Disston firm.

Huntington Downer, who was in charge of the Pittsburgh office of the Dolomite Products Co. until that office was closed April 1, has been elected treasurer of the company and will make headquarters at the main office, 1110 Euclid Avenue, Cleveland. In addition to being treasurer, Mr. Downer will continue as Eastern sales manager. He was for many years with the Lackawanna Steel Co. prior to its consolidation with the Bethlehem Steel Co. and for a year or so was manager of the Lackawanna office in Philadelphia.

E. R. Galvin, formerly sales manager of the smokeless powder division of the DuPont interests, at Wilmington, Del., has been made assistant general sales manager of the Cleveland Tractor Co., Cleveland.

Alfred W. Lockwood has joined the sales organization of the Bridgeport Brass Co., Bridgeport, Conn., as a special representative, operating out of the New York office, handling brass pipe and flush valves. For several years he was with Cauldwell Wingate & Co., New York contractors.

Lyle Marshall, formerly manager of the service department, Industrial Works, Bay City, Mich., and later connected with the company's Chicago office, has been appointed district sales manager with new offices at 619 Dixie Terminal Building, Cincinnati. James E. Shearer, assistant sales manager of the Industrial Works, has moved his headquarters from the home office to the New York office, 50 Church Street.

R. O. Hendrickson has joined the organization of the Belle City Mfg. Co., Racine, Wis., as chief engineer. He was formerly vice-president of the J. I. Case Plow Works Co., Racine, in charge of engineering.

B. F. Jones, Jr., chairman Jones & Laughlin Steel Corporation, Pittsburgh, is back at his desk after wintering in California.

W. C. Stevenson has been appointed Cleveland district manager of Hickman, Williams & Co., pig iron brokers, who have opened an office at 1418 Union Trust Building. Mr. Stevenson has been connected with the firm since 1907 and was resident manager of its Cincinnati office for five years until six months ago, when he was transferred to Pittsburgh as assistant to the president.

Edward P. Johnson, 841 David-Whitney Building, Detroit, has been appointed district representative for the Standard Turbine Corporation, Scio, N. Y.

Meeting of Users and Manufacturers of Refractories

The American Refractories Institute, whose formation was recently announced, will hold its first regular meeting on April 14 at 9.30 a. m. in Mellon Institute of Industrial Research, University of Pittsburgh, Pittsburgh. After a short business session, the following program of addresses is scheduled:

"The Value of Research in Industry," by Dr. E. R. Weidlein, director Mellon Institute of Industrial Research.

"The Use of Refractories Materials," by H. L. Dixon, president H. L. Dixon Co., Pittsburgh.

"Refractories Accounting," by A. J. Farber, Haskins & Sells, Pittsburgh, Pa.

"Spalling," by M. C. Booze, senior industrial fellow, Mellon Institute of Industrial Research.

"Relation of Structure and Composition of Refractories to Thermal Efficiency in Regenerators," by S. M. Phelps, industrial fellow, Mellon Institute of Industrial Research.

Inspection of laboratories of Mellon Institute of Industrial Research.

Luncheon at University Club, Natalie Place, Pittsburgh, Pa.

"The American Refractories Institute," by J. D. Ramsay, president Elk Fire Brick Co., St. Marys, Pa.

Anyone interested in the manufacture or use of refractories is urged to attend the meeting, regardless of his affiliation (or not) with the new organization.

Commission Inaugurates New Policy

WASHINGTON, April 7.—The Federal Trade Commission last week entered into its first stipulation since the commission changed its policy of procedure. Before it had concluded proceedings against the NuGrape Co. of America the latter entered into a stipulation with the commission in which it was agreed that without the expense and trouble of additional testimony the commission would enter an order disposing of the proceeding. This opens up the proposal established by the new procedure providing for the closing of cases by stipulation without entering upon hearing, although in the present case hearing had been held for the commission's side. It is believed that action in the NuGrape case will be followed by similar action in other proceedings now before the commission and which may come before it.

OBITUARY

FRED V. CLARY, aged 40, general sales manager for the Titusville Iron Works Co., Titusville, Pa., died at his home in that city on March 28, following an illness of more than three years. He had been associated with the company since 1910 and previous to that time was connected with the American Steel Foundries, Sharon, Pa., and the Carnegie Steel Co.

ALFRED W. FRENCH, president and founder of the French Oil Mill Machinery Co., Piqua, Ohio, died in Los Angeles, Cal., on March 30 of injuries received a few days previous in an automobile accident. Mr. French, who was 63 years old, was at one time an instructor at the Massachusetts Institute of Technology, of which he was a graduate. He was also general superintendent of the National Linseed Oil Co., Chicago, for a time.

CHARLES BROKATE, aged 80 years, superintendent of the William Miller Range & Furnace Co., Cincinnati, died at his home there on March 29. Mr. Brokate was born in Germany and went to Cincinnati at the age of 21. He was employed by the William Miller company for 40 years, starting as a clerk.

HARRY A. GRUSCH, purchasing agent, United Engineering & Foundry Co., Pittsburgh, from its organization in 1901 until a few years ago, died at his home in Pittsburgh April 4. He previously had been identified with the Frank Neeland Machine Co., now the Frank Neeland Works of the United Engineering & Foundry Co. He was 50 years old.

Gear Makers to Devote One Day to Standardization Discussion

Wednesday, May 6, has been set aside for committee reports and addresses on the technical standardization activities of the American Gear Manufacturers Association, which will hold its ninth annual meeting, May 6, 7, 8 and 9, at the William Penn Hotel, Pittsburgh. A. H. Timmerman, of the Wagner Electric Corporation, St. Louis, and president of the Electric Power Club, will address the meeting on "Various Viewpoints of Standardization."

A paper on "The Development of the Gear Art," by Frank Burgess, Boston Gear Works Sales Co., Norfolk Downs, Quincy, Mass., and one of the pioneers in the gear industry, will be a feature of the May 7 session. E. B. Baltzly, Warner Gear Co., Muncie, Ind., will speak, May 8, on "What Has the Gear Manufacturer Added?"

Meetings of Mechanical Engineers

Among meetings scheduled by various local sections of the American Society of Mechanical Engineers are the following:

Birmingham, April 21—At Hotel Hillman at 7.45 p. m. Subject: Materials Handling. Storage Battery Locomotive, by J. W. Moore, American Cast Iron Pipe Co. Handling Coal with Gondola Car Dumper, by Biddle Worthington, Sloss-Sheffield Steel & Iron Co. Hoisting Coal from Mine by Belt Conveyor, by W. L. Adamson, construction engineer. Cableway Haulage, by H. L. Meyer, Dixie Construction Co. Hydraulic Power as an Aid to Material Handling, by C. D. Barr, American Cast Iron Pipe Co.

Cincinnati, April 23—At Literary Club rooms. Subject: The New Miami Fort Station of the Union Gas & Elec. Co. Speaker: C. W. DeForest, manager Electrical Dept., Union Gas & Elec. Co. (Prof. J. T. Faig, secretary, Ohio Mechanics Inst., Cincinnati, Ohio.)

Colorado, April 24—Shop and Production Methods in the Burlington Shops of Denver. Charles Erwin, general superintendent western division of C. B. & Q. Ry.

Schenectady, April 21—At Edison Club Hall, at 8 p. m. Oil-Electric Locomotive, by F. W. O'Neil, chief engineer Ingersoll-Rand Co.

New York, April 22—In Engineering Societies Building at 8.15 p. m. Oil Engine Locomotives. Speakers: E. B. Katte, chief engineer electric traction, N. Y. C. R. R., L. G. Coleman, manager, Ingersoll-Rand Co., Elmer A. Sperry, president Sperry Gyroscope Co.

Minneapolis, April 27—At Central Y. M. C. A. at 6 p. m. Commercial Oil Burning, by Edward Larkin, president Republic Creosoting Co.

Reorganization of Interior Department

The American Engineering Council will start a campaign of countrywide education in behalf of the Government reorganization measure, and drastic changes in the plan to make over the Department of the Interior will be urged upon Congress. These changes have been embodied in an amendment to be sponsored in the Senate by Wesley L. Jones, of Washington, and in the House by Adam M. Wyant, of Pennsylvania.

The present reorganization plan provides that the assistant secretaries of the Interior shall be known as the assistant secretary for Public Domain and the assistant secretary for Public Works. The council asks that provision also be made for an assistant secretary for Public Architecture and an assistant secretary for Public Construction. Both would be appointed by the President.

"The Chemical Composition of Tool Steels," was the subject of J. P. McGill, metallurgist, Vanadium Alloys Steel Co., Latrobe, Pa., at the monthly meeting and dinner of the Pittsburgh Chapter, American Society for Steel Treating at the Fort Pitt Hotel, Pittsburgh, Tuesday evening, April 7. Prior to Mr. McGill's talk, the Westinghouse Electric & Mfg. Co. presented two motion pictures, the first detailing a trip over the electrified division of the Chicago, Milwaukee & St. Paul Railroad, and the second the development of the hydrogeneration of electric power at Niagara Falls, the uses in an industrial way of the current and views of the falls.

Wickwire Spencer Plan of Reorganization Effective

The plan of reorganization of the Wickwire Spencer Steel Corporation has become effective and the $2,515,000 in new cash capital provided through the offering of new securities and the underwriting of the reorganization plan has been paid in to the company.

In the list of new directors are:

T. H. Wickwire, chairman; Samuel F. Pryor, chairman of executive committee; T. H. Wickwire, Jr., president; D. F. Edwards, first vice-president; Frederick B. Adams, chairman of Air Reduction Co.; Frederic W. Allen, of Lee, Higginson & Co.; C. K. Anderson, president American Wire Fabric Corporation; E. C. Bowers, vice-president; L. E. Crandall, vice-president; T. E. Hambleton of Hambleton & Co.; E. C. McDougal, president Marine Trust Co., Buffalo; C. V. Pach, treasurer; P. A. Rockefeller; Charles J. Symington, president Symington Co.; George W. Treat of E. H. Rollins & Sons; W. A. Wickwire and Richard B. Young of E. H. Rollins & Sons.

Last year the corporation showed a net loss of $892,477, after interest and depreciation. For 1923 there was shown a net income of $351,353, after charges. After giving effect to the reorganization plan now completed, the consolidated balance sheet of the Wickwire Spencer Corporation and the American Wire Fabric Corporation shows:

Assets: Cash $1,542,668; accounts and notes receivable $2,106,415; inventories $7,275,098; U. S. Government securities $46,962; investment in mining companies $1,057,698; miscellaneous receivables, etc., $117,521; plant account, less depreciation $22,437,967; deferred charges $484,727; total $35,069,056.

Liabilities: Accounts payable and accruals $1,434,547; mortgages payable $23,000; deferred liability $1,500,000; funded debt $21,924,920; reserves, contingencies, etc., $295,000; surplus applicable to 958,750 shares of common stock $9,891,589; total $35,069,056.

Gray Ores of Alabama

BIRMINGHAM, ALA., April 4.—The Southern Experiment Station of the United States Bureau of Mines, located at Tuscaloosa, University of Alabama, after demonstrations and investigations with gray ores of Alabama, has come to the conclusion that treatment of the ores make them most acceptable for blast furnace use. The ores have not been used much in the past because of difficulty in mining and not being able to get clean ore. Abundance of gray ore is located in Talladega County, Alabama, and the report by the Government department will probably bring about use of the iron ore.

COMING MEETINGS

April

National Metal Trades Association. Wednesday, April 22. Twenty-seventh annual convention, Hotel Cleveland, Cleveland. L. W. Fischer, Peoples Gas Building, Chicago, secretary.

American Welding Society. April 22, 23 and 24. Annual meeting, Engineering Societies Building, New York. Miss M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

National Supply and Machinery Distributors' Association. April 27, 28 and 29. Annual convention, Ambassador Hotel, Atlantic City. George A. Fernley, 505 Arch Street, Philadelphia, secretary-treasurer.

Southern Metal Trades Association. April 28 and 29. Annual convention, San Antonio. W. E. Dunn, Jr., Atlanta, secretary.

New England Trade Conference under auspices of the Chamber of Commerce. April 29 and 30. Providence.

American Institute. April 27 to May 2. Exposition of Inventions, Engineering Societies Building, New York. Headquarters of institute, 47 West Thirty-fourth Street, New York.

High Rate of Production in the Shenango Valley

SHARON, PA., April 7.—In the Shenango Valley, steel property operations are being carried forward at a uniformly high rate of production. The American Sheet & Tin Plate Co. is operating its tin mills at Farrell, Pa., in full and 10 of 12 sheet mills. The Carnegie Steel Co. at Sharon is operating from 13 of 15 open-hearth furnaces, all the units available, with rolling mill operations on a proportionate basis.

The American Steel & Wire Co. is maintaining its plant at 85 per cent at Sharon, Pa.

The Sharon Steel Hoop Co. is operating at a capacity rate, both at Sharon, Pa., and at Youngstown. The company is installing electrical drives, this work to continue for two months.

The Pennsylvania Car Co. is delivering from 12 to 15 tank cars daily to the Texas Co., and shared with several other car repair interests in an award from the Missouri Pacific Railroad for the repair of 2000 cars.

The Standard Tank Car Co. is working on an order for 400 cars for the Quaker City Line Co., Philadelphia, this order to be worked out in about 30 days.

Complaint Against Pacific Coast Manufacturers Dismissed

WASHINGTON, April 7.—Announcement has been made by the Federal Trade Commission of dismissal of its complaint against six Pacific Coast manufacturers of iron and steel products and a supply company organized by the steel companies for the purchase of scrap iron and steel. The complaint had alleged that the companies had combined to suppress competition in the purchase of raw materials.

Those named in the commission's order of dismissal are: Pacific Coast Steel Co., San Francisco, Portland and Seattle; Columbia Steel Corporation, Pittsburg, Cal., and Portland; Llewellyn Iron Works, Los Angeles; Judson Mfg. Co., San Francisco; Southern California Iron & Steel Co., Los Angeles, and the Steel Mill & Foundry Supply Co.

Briggs & Turivas, Inc., Will Operate Bar Iron Mill at East Chicago

CHICAGO, April 7.—Briggs & Turivas, Inc., which company recently purchased the bar iron mill of the Republic Iron & Steel Co. at East Chicago, Ind., has decided to operate the plant rather than dismantle it. Possession of the mill will be gained about May 1, after the Republic company has discharged all obligations to its customers. It is probable that a separate company will be incorporated by the purchaser to operate the plant, which has a rated monthly capacity of 6000 tons of rolled iron and employs 600 men. The mill property embraces 16 acres. The reported purchase price is $300,000.

Sheet Prices Irregular at Youngstown

YOUNGSTOWN, April 7.—There is little change this week in the demand for finished steel. Non-integrated sheet rollers are securing second quarter sheet bars at $37 per ton, chiefly at present under old contracts, as there was a fairly heavy carryover from the first quarter.

In the sheet market, prices are irregular and show weakness. Blue annealed sheets in this district are quotable at 2.60c. to 2.70c. per lb., Pittsburgh; black sheets average 3.40c. for No. 28 gage; galvanized 4.50c. and full finished 4.40c. for No. 22 gage automobile body stock.

Merchant steel bars are apparently commanding 2.10c. on new business, with contract tonnage still moving from the district at 2c.; steel plates are quotable at 2c.

Hot-rolled strip prices range from 2.20c. for the wider sizes to 2.40c. for the narrower widths, with cold strip pegged at 4c.

Welding vs. Riveting of Large Structures

(*Continued from page* 1051)

York made elaborate tests on welded roof trusses for a factory building. The section of the truss was loaded with twice the live load prescribed by the building code. During the test, while the load was on the truss, the maximum deflection at the center was 9/16 in. The load was removed 48 hr. afterward and the only permanent deflection was 1/16 in. at the center.

If welding is to be substituted for riveting, in many places the deposited metal at the weld would be subjected to shear. In order to secure data on this subject a number of tests were made at Union College from which it developed that the average shearing strength of beads deposited by welding was 36,000 lb. per sq. in. With a factor of safety of 4, the safe allowable shearing stress would be 9000 lb. per sq. in.

Joints Should Be Designed for Welding

Up to the present time most welded structures have not been proportioned with proper regard for stresses to be carried and the strength of the parts necessary to carry them. Little is known of safe methods of design for steel structures, although there are several instances where steel work has been erected without rivets, the joints having been put together by arc welding. In most cases this work has been done by designing the structure for riveting and then welding the joints whenever possible with the electric arc. In this manner welded structures have been built which are considerably heavier and stronger than is necessary to carry the required load.

The substitution of welding for rivets in structures designed for using either method is wrong, as the results derived from welding in such a method are at least partially defeated. All of the structural shapes, such as angle bars, tee bars, zee bars, etc., were designed primarily for convenience in riveting. One flange of an angle bar is used simply as a means of fastening the other flange in its proper position. It is only the outstanding flange that gives stiffness and strength to the plate construction and the flange used for fastening by rivets is valuable only for furnishing the place for the rivets and does not add to the strength of the structure.

Another important item which the structural engineer who considers welding for fabricating should have in mind is the design of parts in such a way that most of the welding can be performed in the shop and overhead welding eliminated as much as possible.

The structural engineer is inclined to look with suspicion on a single weld which carries enormous loads and where failure might result in damage to life or property. While he knows that riveting is not altogether a safe proposition, nevertheless he feels that because there are so many of them that even if 15 per cent were bad the structure would still be safe because of the factor of safety employed in the design.

These engineers feel, moreover, that while some welded parts are equal to the strength of the original material, nevertheless it is impossible in some instances to detect a bad weld which may have only 50 per cent of the strength of the original material. Of course, the welding experts will argue that the solution is proper welding inspection. However, if possible welding parts should be so designed that there will be a large number of small welds to carry the load instead of one large weld. The same arguments would then hold true as in the case of riveting.

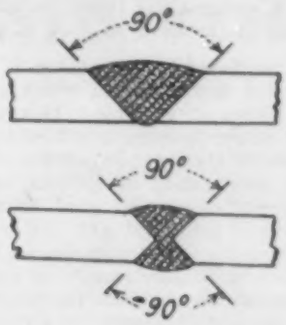


Fig. 1—Upper Figure Is Single Vee Type of Joint. Lower Figure Double Vee Type

In the past the structural engineers who were not familiar with welding have been inclined to take the cross sectional area of a weld and allow so many lb. per sq. in. as the tensile strength or shearing strength of this particular weld. There are many important variables which make such a procedure dangerous, such as, for example, design of joint, chemical composition of parts to be welded, type of electrode used. This can be best illustrated by comparing the two simple types of joints shown in Fig. 1. In one figure there is shown a single vee double beveled joint; in the other a double vee double beveled joint. The cross section of deposited weld metal is the same and yet a number of tests in structures such as tanks have shown that the double vee joint is from 25 to 50 per cent stronger than the single vee joint. This difference can be ascribed to the fact that (1) it is harder to make a thoroughly sound fused joint with the single vee type, particular at the bottom of the vee, and (2) that because of the unsymmetrical section of the single vee a bending strain is thrown on the deposited metal (it must be remembered that the deposited metal has different physical characteristics from the original metal). From an economical viewpoint it so happens that it costs less to make a double-vee than it does a single-vee joint.

It should also be remembered that the physical properties of the deposited metal depend not only upon the type of electrode used, but also on the physical and chemical properties of the base metal.

Another important factor which must be taken into account is that in some instances joints designed for riveting do not make it possible to secure good welding. Factors such as position of welding, heat conductivity of the edges to be joined, etc., are some of the reasons that may be cited.

Large office buildings are usually of steel cage type. This type of construction lends itself particularly to welding, as the safety of a building does not depend upon any single weld.

Some Cost Comparisons

In a paper read before the Society of Engineers and Shipbuilders in Scotland, James Caldwell brings out that in the construction of a cross channel barge the savings effected were 245 man hours and 1000 lb. of metal. The comparative costs of building this barge are $1,462.86 for the welded construction as against $1,892.48 for the riveted. Some comparative costs for

Name of Fitting	Number Pieces	Rivets Per Piece	Inches of Welding Per Rivet	Total Riveting Cost	Total Welding Cost	Per Cent Saving by Welding
Cargo batten clips	98	2	10	$97.32	$127.61	—31
Large awning pads	20	2	9	44.96	21.81	51.5
Small awning pads	24	2	4.75	44.13	20.61	53
Triangular hand rail stanchions	48	2	6	126.36	56.79	55
Vertical hand rail stanchions	115	2	9	142.92	137.72	4
Pipe hangers—F. W. line	57	2	4	118.26	70.66	40.4
Pipe hangers, drain and fuel	92	2	5	191.10	141.71	26
Clips—pump room, pipe hangers	6	4	9	14.70	13.24	9.8
Clips, pump room gratings	24	2	3.5	42.77	35.47	17
Bounding angle butts	50	..	..	329.05	71.68	78

riveting versus welding for a number of operations in shipbuilding have been prepared by E. H. Ewertz, general manager, Moore Plant, Bethlehem Shipbuilding Corporation. A summary of these, including overhead costs, are given in the table at foot of page 1097.

In a paper prepared by the author in 1920, figures were compiled for welding costs which are applicable to nearly all forms of welding. This paper showed that the speed of arc welding is affected by a number of factors, some of the most important of which were type of joints, preparation of welding edges, position of welding, amount of current used, diameter of electrode, polarity and length of arc. In order to make the figures universally applicable the author expresses the speed of arc welding in pounds of metal deposited per hour. To compute the time for welding any particular job it is only necessary to divide the pounds of added metal that must be used to complete the joint by the pounds of metal that can be deposited per hour. The weight of this added metal is, of course, readily computed from the volume it is expected to occupy. In computing this volume the author states that it is advisable to add to 10 to 20 per cent to allow for the fact that the added material rises above straight line surfaces and is consequently of somewhat larger cross section.

The average result of a vast amount of data shows the operator can deposit 1.8 lb. of metal per hour. This rate depends largely upon whether the work is done out in the open or in a special place provided in the shop. For outside work the operator may not average more than 1.4 lb. per hour. The loss in speed for outside work is brought about largely by the cooling action of the air and also somewhat by the added inconvenience to the operator. The value of pounds per hour given above is based on the assumption that the work has been lined up and is ready for welding.

In computing costs it is also important to know the amount of electrode material that is necessary to complete a given job. From experience it has been found that an average of 70 per cent of the weight of bare iron wire is deposited in the weld, the rest being either vaporized or wasted as "short ends." From these figures and knowing the volume of metal needed to complete any joint, it is, of course, quite easy to determine the total weight of electrodes needed.

A Number of Welded Structures Completed

A large number of welded structures are already in existence. Some of these are as follows:

1. Stables in England covering area of 9,000 sq. ft.
2. Mill building covering an area of 22,000 sq. ft.
3. Cross channel barge for use between England and France, length 125 ft. 9 in., breadth 16 ft. 4 in., molded depth 7 ft. 9 in.
4. Coasting ship, "Fullagar," 500 tons, length 150 ft.
5. Transmission line towers in Belgium, 72 ft. high, carrying seven wires on 525-ft. spans.
6. Gasholder in Melbourne, Australia, 2,000,000 cu. ft. capacity.
7. Boom for a derrick 90 ft. long.
8. Transformer tower 40 ft. high, 40 ft. wide, 40 ft. long.
9. Steel bridge between two buildings.
10. An all welded steel floor 64 ft. by 24 ft.
11. Welded tower, 100 ft. high, with a spiral stairway.
12. Oil tank, 80,000 bbl. capacity.
13. Arc welded radio towers in Pekin, China, 115 ft. high.
14. Tug boat, 42 ft. long.
15. Welded caisson for a 460-ft. drydock.
16. Welded pontoon for a crane 65 ft. long.
17. Battle target 172 ft. long.

Question of Lack of Uniformity of Welds

One of the greatest handicaps to welding is the contention that welds are lacking in uniformity and that it is not yet possible to tell when a welded joint is good or bad. It is a well-known fact that in a riveted structure not all the rivets have the theoretical strength that they are supposed to have. If the rivet is too cold or the thickness of steel to be riveted too great or the pressure of the riveting machine not sufficient, the rivet is not upset enough to fill the hole and the proper bearing of the rivet upon the plate is not secured.

However, structural engineers will argue that there are enough rivets so that even if 15 per cent of them are bad the factor of safety is such that the riveted joint will withstand the stresses which it meets in service. Moreover, a loose rivet does not necessarily mean that it has no strength. The welded structures should be designed so that there will be a great many welds instead of all the strength concentrated in one place.

The real solution, however, is inspection, proper materials, apparatus and skilled workmen.

It is perfectly possible to have inspectors so trained that during the welding processes they can see whether proper welding is being done. As a matter of fact a good operator knows whether he is doing a good job. Conscientious workmen are quite necessary if the use of welding is to be extended. On a number of occasions prominent welding engineers have expressed an opinion that the skill of welders should be tested before they are put on the important work. This is very readily done, but it does not alter the fact that conscientiousness on the part of workmen is absolutely necessary, for under test he may do a 100 per cent job while in service he may be careless.

Another important development which is certain to have its influence is the use of automatic and semi-automatic welding machines, thereby eliminating the factor of the operator.

Further Data Needed

The following important conclusions seem to the author worthy of special mention:

1. Electric arc welding possesses possibilities of being used as a means of fabricating structural steel parts with resulting economies and superiority of product.
2. Test data and service experience have already shown that welding can be safely used in structural work if proper regard is given to design, methods, inspection, workmen, materials and specifications.
3. If welding is to be specified, a structure should be designed primarily for welding, as in this way only will it be possible to get a good job and effect the maximum economies.
4. While a vast amount of data is already available still others will have to be obtained, and in particular types of joints, shapes of structural members will have to be developed as a result of welding experience and tests.
5. Structural engineers, steel companies and fabricating companies should get together and cooperate in the preparation of data and specifications which will be of service to the structural engineers and in conducting a comprehensive series of investigations to secure the data and information that are now lacking.

Three recuperative billet heating furnaces will be erected at the Brier Hill plant at Youngstown, Ohio, of the Youngstown Sheet & Tube Co. The contract for the furnaces has been placed with the Chapman-Stein Furnace Co., Mt. Vernon, Ohio. The recuperators will be of the refractory tile type which operates without fans. It is stated that the stack-like action of the vertical air flues in the recuperator serves to deliver an abundance of air to the furnace ports at a positive pressure and preheated to around 1400 deg. Fahr. The three furnaces will be used for heating slabs for an 84-in. plate mill. The Youngstown Sheet & Tube Co. is at present using four of this type of furnace in connection with skelp mills at East Youngstown and also an annealing furnace with the same type of recuperators.

The International Harvester Co. and affiliated interests report net income for 1924 of $13,037,195 after depreciation, taxes, etc. This compares with $10,274,376 in the preceding year. Current assets at the close of 1924 were $167,651,473 against current liabilities of $19,335,885. Net working capital compared with 1923 as $148,315,588 to $143,396,730.

MACHINERY EXPORTS LESS

February Below January, but Eight-Month Total Same as Last Year—Imports Advance Slightly

WASHINGTON, March 28.—Declining almost $5,000,000, exports of machinery in February were valued at $23,215,776, against $28,117,952 in January, while for the eight months ended with February they were valued at $205,854,500, which is remarkably close to the value of exports for the corresponding period of a year ago, when the total was $205,699,183. Exports of metal-working machinery in February totaled 2905 units, with a value of $707,445, compared with 2752 units, valued at $845,986, in January. Imports of machinery in February were valued at $814,703, against $803,829 in January.

Of shipments of locomotives in February, with a total value of $267,932, Cuba was the chief market, the value of locomotives going to that country being $216,500, while Canada came second, taking $32,942. Exports of lathes in February, valued at $138,080, went principally to Italy, $38,705; United Kingdom, $25,599, and Russia in Europe, $22,226. Of sewing machine exports, valued at $464,898 in February, shipments and values for principal countries of destination were: Mexico, $109,266; United Kingdom, $45,574; Cuba, $39,275, and Chile, $37,709.

Distribution of typewriters was widespread over the world as usual in February, the total value being $1,448,129. Among the principal countries to which typewriters were shipped and the values were: France, $249,950; United Kingdom, $231,484; Germany, $123,921; Italy, $121,125; Brazil, $52,139; Cuba, $50,668, and Spain, $40,678. Exports of printing presses in February were valued at $487,640, of which shipments to the value of $160,610 went to Japan, while those to Australia were valued at $134,628 and those to the United Kingdom was $87,110. Exports of harvesters and binders in February were valued at $717,367, shipments to France being valued at $316,619 and those to the United Kingdom at $190,442.

Machinery Exports from the United States

(By Value)

	February, 1925	February, 1924	Eight Months Ended February, 1925	Eight Months Ended February, 1924
Locomotives	$267,932	$359,185	$5,135,714	$3,010,422
Other Steam Engines	213,296	88,687	1,128,102	738,243
Boilers	147,854	150,756	1,211,930	1,346,205
Accessories and Parts	73,029	300,684	1,194,017	2,964,477
Automobile Engines	938,807	560,604	4,165,645	2,802,138
Other Internal Combustion Engines	426,942	378,849	4,499,964	4,180,277
Accessories and Parts for	219,749	327,293	2,038,175	2,284,385
Electric Locomotives	7,563	.....	1,337,963	1,145,700
Other Electric Machinery and Apparatus	447,441	720,416	4,877,798	6,167,943
Excavating Machinery	175,810	152,389	1,410,266	1,239,232
Concrete Mixers	75,466	56,263	447,031	375,177
Road Making Machinery	75,932	42,212	685,612	661,986
Elevators and Elevator Machinery	99,436	210,184	1,349,220	1,445,172
Mining and Quarrying Machinery	581,531	929,815	6,356,592	7,595,408
Oil Well Machinery	555,076	470,676	4,170,766	4,732,520
Pumps	443,729	604,944	4,486,476	5,347,297
Lathes	138,080	88,360	926,760	918,921
Boring and Drilling Machines	51,029	21,255	483,555	478,664
Planers, Shapers and Slotters	34,033	33,082	393,694	183,694
Bending and Power Presses	12,338	14,849	545,230	313,866
Gear Cutters	98,980	20,887	343,565	308,513
Milling Machines	44,018	35,021	595,100	300,482
Thread Cutting and Screw Machines	32,807	53,880	366,505	471,165
Punching and Shearing Machines	5,793	8,908	86,929	104,362
Power Hammers	12,657	6,009	166,189	122,096
Sharpening and Grinding Machines	183,345	89,279	1,327,565	846,115
Other Metal Working Machinery and Parts of	366,695	295,399	2,771,205	3,032,527
Textile Machinery	798,324	507,211	6,029,968	5,536,729
Sewing Machines	464,898	722,486	4,686,712	7,064,327
Shoe Machinery	119,297	124,936	1,020,722	825,734
Flour-Mill and Gristmill Machinery	47,506	43,862	485,573	164,263
Sugar-mill Machinery	156,995	161,050	7,318,373	5,611,354
Paper and Pulp Mill Machinery	54,427	110,694	1,131,720	1,350,734
Sawmill Machinery	94,530	47,748	494,448	436,152
Other Woodworking Machinery	88,018	118,953	857,916	847,146
Refrigerating and Ice Making Machinery	171,212	1,258,061	1,235,880	1,449,944
Air Compressors	248,336	206,551	1,960,030	1,876,729
Typewriters	1,448,129	1,533,446	10,443,368	9,283,052
Power Laundry Machinery	52,230	60,278	598,768	641,095
Typesetting Machines	283,357	394,503	2,313,995	2,791,909
Printing Presses	487,640	505,729	3,306,906	3,397,461
Agricultural Machinery and Implements	4,435,300	4,415,527	35,965,317	36,250,909
All Other Machinery and Parts	8,546,151	8,916,930	75,904,325	75,125,998
Total	$23,215,776	$28,926,819	$205,854,500	$205,699,183

Physical Examination of Workers More General

That American industry leads the world in protecting the health of its workers is evident from the great forward strides made in this field by industrial establishments in the United States, as reflected in a survey made by the National Industrial Conference Board, New York. According to the investigation, as far as completed, about 16 per cent more per employee is now being spent by industry on medical supervision than was being spent when a similar survey was made four years ago.

Of 446 establishments covered by the present survey, 255 report that applicants for employment are being physically examined, and most of these plants use the result of the medical examination as a guide in selecting the proper work for the applicant. In many plants employees, as well as executives, are reexamined at regular intervals. Much care is exercised to safeguard workers from contact with infectious diseases.

Applicants Do Not Object

Objections to physical examination by employees and applicants for work are practically nil, the investigation indicates. Only 11 plants had discontinued the policy of medical examination, of the 446 included in the survey.

In 501 plants replying to the questionnaire the following personnel was engaged in looking after the physical welfare of the workers: 265 full-time physicians; 356 part-time physicians, 773 physicians on call; 13 full-time dentists, 78 part-time dentists; 152 male nurses, 693 female nurses and 121 visiting nurses. The medical staffs included 256 technical assistants and 361 clerical assistants.

United States Metal-Working Machinery Exports

	February, 1925		January, 1925	
	No.	Value	No.	Value
Lathes	85	$138,080	87	$87,753
Boring and drilling machines	110	51,029	146	64,466
Planers, shapers and slotters	21	34,033	39	79,083
Bending and power presses	15	12,368	20	57,470
Gear cutters	43	98,980	22	60,520
Milling machines	31	44,018	92	129,582
Tread-cutting and screw machines	41	32,807	73	64,748
Punching and shearing machines	20	5,793	8	17,276
Power hammers	30	12,657	26	13,287
Sharpening and grinding machines*	92	182,345	233	174,696
Chucks, center lathe, drill and other metal-working tools	1,338	18,950	646	21,485
Pneumatic portable tools	1,079	76,385	1,355	75,620
Total	2,905	$707,445	2,752	$845,986

*External and internal grinding machines only; "other sharpening and grinding machines" are reported now by weight instead of by number.

Imports of Machinery Into the United States

(By Value)

	February		Eight Months Ended February	
	1925	1924	1925	1924
Metal-working machine tools	$15,251	$31,040	$166,871	$267,474
Agricultural machinery and implements	293,582	167,810	1,482,925	1,570,648
Electrical machinery and apparatus	51,494	27,439	1,141,738	272,050
Other power generating machinery	740	30,481	38,333	452,924
Other machinery	265,871	470,449	2,612,772	3,246,630
Vehicles, except agricultural	154,665	164,875	1,025,066	1,619,349
Total	$814,703	$892,094	$6,459,705	$6,429,155

BELGIAN MAKERS WELL ENGAGED

Prices Maintained and Some Are Advanced—Semi-Finished Steel Scarce

ANTWERP, BELGIUM, March 25.—In general, makers are maintaining prices without difficulty. For a few commodities even some small advances have been noted. The number of orders passed is not considerable, but it is satisfactory, considering that a large number of works, principally the big factories, are still well provided with orders. Important business in rails and bars has been placed from abroad among the works of the Liége district.

While the market is not strongly upward, as seemed to be the case a fortnight ago, one may be assured that the prices now quoted will not undergo the smallest reduction in the near future. Exporters who have had a good lot of orders in hand for some time, considering the stability of prices reached, have been compelled to book at once and accept makers' prices now, without waiting for a possible rise, which in such circumstances might occur. In fact, information from abroad is mostly favorable. On the other hand, Luxemburg works already are quoting higher prices, just when their French competitors have disposed momentarily of sufficient orders from their own market. Makers in those districts, also, are well engaged.

Finished Steel.—This is especially firm. Prices for bars have been pretty well discussed but without drop—this on account of the stronger position of the makers. The accepted quotation for large business and favorable specification ran lowest at £5 14s. 6d. (1.22c. per lb.), f.o.b. Antwerp, but most generally £5 15s. (1.23c.) with application of all the extras. Hoops are well demanded; on the other hand, beams are slightly depressed. Normal sections are quoted, f.o.b. Antwerp, about £5 8s. 6d. (1.16c.) with 2s. to 4s. extra for small and abnormal sections. German offers caused wire rods to give way slightly. Export prices for steel products, f.o.b. Antwerp, are approximately as follows:

	Fr.	Per Lb.
Bars	540 or	$27.55 or 1.23c.
Beams	515 or	26.30 or 1.17c.
Rods	635 or	32.90 or 1.47c.
Corrugated bars	620 or	31.65 or 1.41c.
Hoops	750 or	38.25 or 1.71c.
Cold rolled steel hoops	1,120 or	57.20 or 2.55c.
Drawn steel, squares	950 or	48.45 or 2.16c.
Drawn steel, rounds	930 or	47.45 or 2.12c.
Drawn steel, hexagons	1,025 or	52.80 or 2.36c.
Spring steel	1,050 or	53.55 or 2.39c.
Rails	650 or	33.15
Wire rods	650 or	33.15

Sheets.—Previous prices have been obtained easily. Heavy sheets are firm. The price quoted is in no case lower than £7 (1.49c.), f.o.b. Antwerp. For this country, prices went up to 675 to 680 fr. (1.55c. to 1.56c.), i. e., an extra 25 to 30 francs per ton above export prices. Middle thickness sheets are well demanded; their prices reach £7 12s. 6d. and £7 15s. 6d. (1.63c. and 1.66c.), f.o.b. Antwerp. Makers are well provided with orders. Prices for different dimensions are approximately as follows, all per gross ton, f.o.b. Antwerp:

	Fr.	Per Lb.
Thomas sheets 0.5 mm. (No. 25½ gage)	1,150 or	$58.70 or 2.62c.
Thomas sheets 1 mm. (No. 19½ gage)	1,030 or	52.55 or 2.35c.
Thomas sheets 2 mm. (No. 14 gage)	860 or	43.90 or 1.96c.
Thomas sheets 3 mm. (No. 11½ gage)	755 or	38.50 or 1.72c.
Thomas sheets 5 mm. (No. 6½ gage)	650 or	33.15 or 1.48c.
Galvanized sheets 0.5 mm	2,240 or	114.30 or 5.10c.
Galvanized sheets 1 mm	1,700 or	86.75 or 3.87c.
Average price for polished sheets	1,500 or	76.55 or 3.42c.

Iron.—The situation of makers remains as difficult as before, especially on account of the high scrap prices. Quotations have dropped somewhat further and became, for export, about £6 3s. ($29.39), f.o.b. Antwerp, basis. Makers' basis prices for this country are:

	Fr.
Merchant iron No. 2	590 or $30.10
Merchant iron No. 3	600 or 30.60
Merchant iron No. 4	610 or 31.15

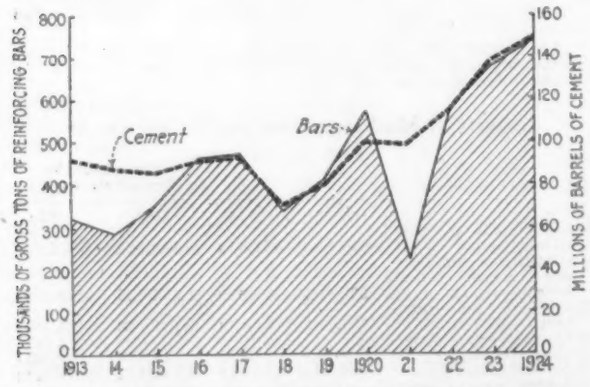
Semi-Finished Steel Materials.—Quantities available for sale are insignificant. Re-rollers in this country take nearly all the output at prices higher than those offered by foreign buyers. The lowest prices allowed by makers are £5 6s. ($25.33) for billets and £5 8s. 6d. ($25.93) for slabs, f.o.b. Antwerp, quotations which are not attracting business from abroad. Prices are, f.o.b. Antwerp:

	Fr.
Billets	500 or $25.50
Blooms	485 or 24.75
Sheet bars	510 or 26.05

Pig Iron.—Prices have been advanced by 5 to 10 fr. per ton. Phosphoric quality foundry pig iron, Luxembourg or Belgian origin, is quoted at 355 to 360 fr. per ton, f.o.b. Antwerp, i. e., $18.40 per gross ton. Makers are pretty well engaged and large shipments are not possible within two months. The inland demand has become larger and further orders have been placed. Belgian low phosphoric pig iron (Bessemer hematite) is quoted at 430 fr., f.o.b. Antwerp ($21.95), with the same price for high manganese hematite (Si., 1 per cent max.; Mn., 2 to 3 per cent; P., 0.10 per cent max.; S., 0.04 per cent max.). English hematite from the East Coast is offered again at lower prices but without large success. Buyers are not plentiful while the Belgian price, also, has been reduced.

Concrete Reinforcing Bars and Cement

A record breaking production of Portland cement has called for unusual tonnages of steel bars for use in connection with the cement in building up reinforced concrete. The relationship between the two is not a definite set of parallel lines, but there is a decided parallelism in general trend, as will be noted from the diagram. In the table will be found the production of cement as recorded by the United States Geological Survey, with the corresponding tonnage of reinforcing bars reported by the American Iron and Steel Institute. The relation between the two is shown in the last column, which indicates the number of barrels of cement for each gross ton of bars. Figures are for yearly tonnages, without reference to seasonal fluctuations:



Remarkably Close Similarity in the Curves for Cement Output and Steel Reinforcing Bar Production Is Shown for 1916 to 1919 and for 1922 to 1924. The diagram is based on 200 bbl. of cement for each ton of bars

	Concrete Reinforcing Bars, Gross Tons	Portland Cement, Bbl.	Barrels Per Ton
1913	319,670	92,097,000	288
1914	288,471	88,230,000	306
1915	353,408	85,915,000	243
1916	461,400	91,521,000	198
1917	471,184	92,814,000	197
1918	344,620	71,082,000	206
1919	419,021	80,778,000	193
1920	572,445	100,023,000	175
1921	227,228	98,842,000	435
1922	575,816	114,790,000	199
1923	680,867	137,460,000	202
1924	740,000*	148,859,000	201

*Estimated.

European Markets Remain Dull but Firm

England Reports Higher Shipbuilding Output on Clyde —Germany Competing in Ships—Luxemburg Expanding Operations

(*By Cablegram*)

LONDON, ENGLAND, April 6.

PIG iron is quieter, with a consequent further relapse in prices, probably owing to the near approach of the holidays. Stocks of foundry grades are small. There is talk of reducing the output further. Hematite is weak, on poor demand. William Whitwell & Co., Ltd., Stockton-on-Tees, are blowing out two furnaces, leaving only 11 hematite North-Eastern furnaces active.

Steel is dull, though recent new shipbuilding orders will bring more work to plate mills. Dorman, Long & Co., Ltd., Middlesbrough, have closed a basic furnace at the Redcar Iron & Steel Works. Domestic trade prices have been reduced 5s. ($1.20, or 0.054c. per lb.), but buyers are not attracted.

Clyde shipbuilding output in March was 31 vessels, of 72,206 tons gross register. [This was a considerable improvement over February's 12 vessels and 40,936 tons, and over the March, 1924, output of 16 vessels and 58,218 tons.]

Foreign ore is deadly dull so far as consumers here are concerned, but foreign demand is broadening. Germany has bought 60,000 tons of high-grade North African ore at 23s. 6d. ($5.62) c.i.f. Rotterdam. Bilbao Rubio is held nominally at 22s. to 22s. 6d. ($5.26 to $5.38) c.i.f. Tees.

Sheets and Tin Plate

Tin plate is steady. The recent fall in price of tin enabled more makers to accept the schedule price and fair business is moving at this figure. Domestic consumers are the most active buyers, but their individual tonnages are not important. Export buying includes the Far East, South America and the European continent.

Galvanized sheets are dull, but full prices are obtainable for small parcels. Some makers are well off for orders, while others are in need of new business.

Black sheets are dull and unchanged, though it is reported that some sellers are willing to accept lower prices for Far Eastern specifications. At the moment, demand is poor.

On the Continent of Europe

Continental position is obscure; prices generally are firm, with makers well placed, but few fresh orders are coming in. Consumers are disinclined to purchase, except at lower figures, but some small business has been done.

Sheet bars are being sold at £5 9s. ($26.05) f.o.b.; joists (beams), at £5 9s. (1.16c. per lb.) f.o.b. Wire rods have been done at £6 12s. 6d. ($31.67).

To keep its output within the permitted quota, the Bochumer Verein, in Westphalia, is preparing to close down one of its steel works. In Luxemburg the Société Metallurgique des Terres Rouges is to blow in one furnace at Esch [the company has five furnaces there] and gradually to resume full production there.

In France the Government has authorized the exportation of 250,000 tons of scrap to Belgium, England and Italy. There were 135 blast furnaces blowing in France on March 1.

GERMANY CAN COMPETE

Costs Below Those of Her Neighbors—Capital Charges Coming Down—Business Good

BERLIN, GERMANY, March 13.—The success of the Deutsche Werft Corporation of Hamburg in getting a contract to build five large motor vessels for a British firm, at a price so much below British tenders that competition could hardly be spoken of, has revived the controversy regarding German ability to undersell rivals. In spite of German professional pessimism on

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.78 per £1, as follows:

Durham coke, del'd	£1	2s.	to £1	2½s.	$5.26	to	$5.38
Bilbao Rubio ore†	1	2½			5.38		
Cleveland No. 1 fdy	4	2½			19.72		
Cleveland No. 3 fdy	3	17½			18.52		
Cleveland No. 4 fdy	3	17			18.40		
Cleveland No. 4 forge	3	15½			18.04		
Cleveland basic	4	2½			19.72		
East Coast mixed	4	3			19.84		
East Coast hematite	4	19	to 5	0	23.66	to	23.90
Ferromanganese	15	0	to 15	10	71.70	to	74.09
*Ferromanganese	15	0	to 15	10	71.70	to	74.09
Rails, 60 lb. and up	8	10	to 9	0	40.63	to	43.02
Billets	7	5	to 8	5	34.65	to	39.44
Sheet and tin plate bars, Welsh	7	17½			37.64		
Tin plates, base box	1	2½	to 1	2¾	5.29	to	5.44
					C. per Lb.		
Ship plates	8	15	to 9	5	1.87	to	1.97
Boiler plates	13	0	to 13	10	2.77	to	2.88
Tees	8	15	to 9	5	1.87	to	1.97
Channels	8	0	to 8	10	1.71	to	1.81
Beams	7	15	to 8	5	1.65	to	1.76
Round bars, ¾ to 3 in.	9	0	to 9	10	1.92	to	2.03
Galv. sheets, 24 gage	16	0	to 16	10	3.41	to	3.52
Black sheets, 24 gage	11	10			2.45		
Black sheets, Japanese specifications	15	5			3.25		
Steel hoops	10	15	and 12	10*	2.29	and	2.67*
Cold rolled steel strip, 20 gage	16	0			3.41		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)								
Belgium	£3	15s.			$17.93			
France	3	15			17.93			
Luxemburg	3	15			17.93			
Basic pig iron: (a)								
Belgium	3	14			17.69			
France	3	14			17.69			
Luxemburg	3	14			17.69			
Billets:								
Belgium	5	5			25.10			
France	5	5			25.10			
Merchant bars:					C. per Lb.			
Belgium	5	16			1.24			
Luxemburg	5	16			1.24			
France	5	16			1.24			
Joists (beams):								
Belgium	5	10			1.17			
Luxemburg	5	10			1.17			
France	5	10			1.17			
Angles:								
Belgium	5	18½	to £6	0s.	1.26	to	1.28	
⅛-in. plates:								
Belgium	7	0			1.49			
Germany	7	0			1.49			
¼-in. ship plates:								
Luxemburg	7	0			1.49			
Belgium	7	0			1.49			

(a) Nominal.

this score it seems that the ability exists. Simultaneously with the Deutsche Werft news, trade journals reported a dozen other instances of success in competition in the steel and engineering branches, in Holland, Ireland, South Africa, Uruguay and Japan.

One current British explanation—low wages and long hours—does not explain everything. Wages, though rising, are indeed still extraordinarily low. In January the average weekly pay of a skilled workman in ten chief industries was 36.77 marks, or $9; and the average weekly skilled wage in the iron, steel and engineering branches was only 35 marks. In the metal industries the 9-hr. day, and often the 10-hr. day, is still in force, though a return to 8 hr. is impending. The economic journal *Wirtschaftskurve* shows that the percentage of wages in production cost is sometimes little more than half that of 1914.

Cheap Labor and Lower Interest

Nevertheless, as Germans use cheap labor for industrial functions for which Americans use labor-saving machinery, the low rates of pay are not altogether a gain. The real wage, which is the factor in moral and physical efficiency, is still lower than before the war. That fact was long obscured by the inaccurate official cost-of-living indexes until lately published. The Government has been obliged to correct these indexes, and now shows living cost to be 35.6 per cent higher than in 1914, whereas the uncorrected index showed a rise of only 25.1 per cent.

American credits are materially reducing German production cost. A Reichswirtschaftsrat inquiry lately showed how high interest rates on borrowed working capital—at time of the inquiry 25 to 30 per cent—sent up prices; but all the recent American loans have been at a nominal rate of 7 per cent. These loans have gone to concerns which, like the "A. E. G.," produce competitive wares (e.g. typewriters) in special American branches, and like Krupp, which does the same (cash registers, calculating machines, etc.).

Proof of the baselessness of German industrialists' complaints that they cannot compete, owing to war and post-war burdens (taxes, railroad rates, social contributions, Dawes industrial bonds) is the declaration of big dividends for 1924. As the steel and engineering concerns mostly end their business year on June 30, their dividend declarations cannot be foreseen. But the textile concerns, whose first business year of complete currency stability ended on Dec. 31, 1924, have declared higher average gold dividends than in 1913, this despite the fact that gold capitalizations average more than in that year. Only a few of the dividends are lower than 12 per cent; some are 18 and 20 per cent.

The Dawes reparations bonds burden, which was at first officially estimated at 17.1 per cent of capital, will be reduced to an estimated 15.73 per cent as result of the discovery that the total industrial capital is higher than was believed. The effective burden will be still further reduced, owing to the Government's decision to make business concerns of all kinds contribute to the interest on the bonds, though only industrial concerns proper with capital exceeding 50,000 marks will be charged with the principal.

Steel Awaits Negotiations with France

The future of the steel trade cannot be foreseen until the negotiations with France and also the new tariff are cleared up. The provisional agreement with France in lieu of a commercial treaty permits the import of a quantity of Alsace-Lorraine and Sarre products at reduced rates, falling to half the present tariff rates. The Luther Cabinet long ago put through the Reischswirtschaftsrat its so-called "minor tariff," but it has not yet submitted this project to the legislature. It is believed that this minor tariff, the aim of which is to increase import duties in preparation for the impending withdrawal of all import prohibitions, contains higher duties than the present upon iron finished articles; but it is not known whether an increase in the duties on iron and steel has been conceded. Great secrecy is being observed, owing to the association of the tariff with the controversial plan to reintroduce the pre-war duties on grain, livestock and meat.

The general business situation is favorable. Unemployment in the Rhineland has declined. The coal situation continues unsatisfactory. Most engineering and machinery branches report increases in foreign orders, though at the Leipzig Spring Fair only moderate business was done. The foreign trade balance continues to cause anxiety. Exports in 1924 totaled only 6567 million marks against imports of 9317 millions; and in January, 1925, imports were 1371 millions against 697 millions exports. Railroad traffic is rapidly increasing; and in February was nearly double the monthly average of mid-1924. Bankruptcies decline, though slowly. In February they numbered 700, which is about the pre-war monthly average. Belgian and French underselling, based on the weak franc exchange, is complained of.

Steel Syndicate May Have 5-Year Term

The market for pig iron, steel and rolled materials is fairly firm, but prices of rolled materials are a little below the highest of the year. The Steel Syndicate (Rohstahlgemeinschaft) has announced that its present 15 per cent reduction in all-around output will be maintained throughout April, but no limitation of output is applied to semi-finished materials or to thin sheets (under 1 mm. or No. 19½ gage), for both of which demand exceeds supply. The Steel Syndicate has been renewed provisionally until Dec. 31, 1926. The plan proposed was to prolong it for a fixed term of five years, but the Hoesch, Stumm and some other concerns would agree to this only on certain conditions. The reason for the proposal to commit the Syndicate to five years of existence was that the formation of the dependent syndicates for the particular steel products would be facilitated if the producers were assured that the head Syndicate would be a permanent institution.

The scrap iron market is dull, prices being, per metric ton: steel scrap, 73 to 74 marks ($17.67 to $17.91); solid scrap, 71 to 72 marks ($17.18 to $17.42); cast iron scrap, 78 to 80 marks ($18.88 to $19.36). The West Upper Silesian works (in German territory) report an increased demand for pig iron, but only half of the 15 blast furnaces are being operated. Export of Silesian iron and steel is dull. The local corporations are making great efforts to develop their production of finished and high-quality wares; and in particular they have ambitious schemes in the automobile branch. Prices of machine tools have been put up.

The following are prices, ex-works, per metric ton, in West Germany:

	Gold Marks	Equivalent
Blooms	112½	$27.22
Billets	120	29.04
Slabs	125	30.25
Wire rods	140 to 145	$33.88 to 35.09
		Per Lb.
Bars	134 to 135	1.45c. to 1.46c.
Structural forms	130 to 132½	1.40c. to 1.43c.
Universal iron	147½	1.60c.
Bands	165	1.78c.
Thick sheets (over 5 mm)	150	1.62c.
Medium sheets (3 to 5 mm. or No. 11½ to No. 6½ gage)	180	1.95c.
Thin sheets (1 to 3 mm.)	210	2.27c.
Thin sheets (under 1 mm. or No. 19½ gage)	225	2.43c.

The Iron and Steel Wares Industries Association of Elberfeld has petitioned the Government to reduce the normal railroad rates, to alter the classification of goods, and to grant a specially low tariff for ship-construction iron. The experiments made last year in Upper Silesia in smelting Yugoslav ore from the mines southwest of Agram proved a success; and arrangements have been made for importing a large quantity of this ore in the current year.

Imports of iron and steel manufactures to the Philippine Islands in February of the current year were valued at 3,659,000 pesos as against 2,145,000 pesos in February, 1924, and for the first two months of the present year they were valued at 7,030,000 pesos, according to a cablegram received by the Department of Commerce from Trade Commissioner E. B. George, Manila. One peso equals 50c.

Plans of New Companies

The Parkomobile Corporation, 224 Park Avenue, Baltimore, has been organized to manufacture a hydraulic jacking and parking device for automotive use. A small initial number is now being manufactured, but the company is open to negotiate for manufacturing on a large scale. Villor P. Williams is president.

The Accurate Gear Co., Springfield, Ohio, incorporated with $50,000 capital stock, plans to manufacture fly wheel ring gears. Its factory is located in the Greenawalt Industries Building, Springfield, and it is installing modern machinery and equipment. E. C. Price is president, Ray Kauffman, vice-president and sales manager, and Stanley Kauffman, general manager and treasurer.

The Rineard Brothers Co., 1 North Third Street, Harrisburg, Pa., has been organized to install equipment for heat ventilating and plumbing.

The Mando Co., care of McKenzie, Smith & Lewis, Syracuse, N. Y., has been organized to manufacture electrical machinery and parts. A plant and equipment have been leased.

The Dooley & Braden Co., 4520 Sixth Avenue, Rock Island, Illinois, has been organized to manufacture automatic oil burners. It has leased a plant at 4420 Sixth Avenue and requirements in metal working machines will depend largely on volume of business. Equipment is sufficient for present needs. C. H. Dooley is president and M. H. Braden, vice-president.

The Neptune Mfg. Co., Masontown, Pa., has been incorporated with capital stock of $100,000, to manufacture and sell electric wavers, curling irons and similar electrical and hardware products, having taken over the Neptune Waver Co., Philadelphia. The new company has leased a plant and is in production. It will be in the market from time to time for wire and aluminum, and for grinding and hardening processes. D. S. Wright is one of the principals.

The B & B Pipe Shops Corporation, 1112 Black Building, Long Beach, Cal., has been organized to succeed the B & B Pipe Shops, Inc., and will enlarge the business which operates in California oil fields, dealing in pipe products and oil well supplies. Charles W. Bardeen, president of the company, was formerly with the Lucey Co. H. A. Bardeen is secretary.

The Tacoma Machine Works, 1501 Dock Street, Tacoma, Wash., recently incorporated, was the purchaser of the plant and equipment of the Doud MacFarlane Machinery Co. at receivers' sale and is now overhauling the machinery and installing some additional equipment. The new company will maintain the machine shop, enlarging the scope of operations, especially in marine repair work. It shall also continue to manufacture marine hardware. Its foundry work will be let out to contract. J. J. Hicks is secretary and manager.

The Western States Dry Battery Mfg. Co., 2501 Fifteenth Avenue West, Seattle, Wash., with capital of $25,875, has taken a building at the above address with option to purchase and plans to manufacture dry cell batteries. Operations will be extended later. Necessary machinery and tools have been purchased, but the company will be in need of materials. W. C. Cleveland is treasurer.

The Mapes & Sprowl Steel Co., 227 High Street, Newark, N. J., incorporated with 1000 shares of stock no par value, has taken over the C. D. Mapes Co. and will carry in stock a variety of alloy, carbon tool steels, tubing, etc. It will also handle hot and cold rolled strip steel and all kinds of sheet steel, specializing in electrical sheet steel used in making laminated iron cores for transformers, motors, generators, etc. C. I. Sprowl is one of the heads.

The Callahan Grinding & Machine Co., 826 Market Street, Anniston, Ala., now operating a jobbing machine shop, plans to enlarge the business in the near future. It is interested in finished and precision machine work to manufacture on a production basis.

The Onlee Piston Ring Co., 2 East Lexington Street, Baltimore, Md., recently incorporated, is now running full, manufacturing piston rings of all kinds. Daniel A. Leonard is president and Isaac Coale, Jr., secretary-treasurer.

The Watson Stabilator Co., 228 Central Avenue, Newark, N. J., has been organized with $25,000 capital stock, to handle automotive equipment.

The Pedwyn Balancer Corporation, 1708 North Salina Street, Syracuse, N. Y., has been organized to manufacture balancers for lifting and balancing electric and pneumatic portable tools, etc. Manufacturing operations have been placed with the Porter-Cable Machine Co.

The Roffmann Rim Corporation, Fifty-Seventh Street and Broadway, New York, recently incorporated with $100,000 capital stock, will manufacture a new type of collapsible rim for automobiles. Manufacturing is being done by contract in lots of 2000 to 5000 daily. However, as soon as the distribution is effected through manufacturers, production may be increased to 10,000 rims daily, and the company may establish a plant of its own. H. R. Roffmann heads the company.

The Metals Coating Co. of New York, care of Briesen & Schrenk, 50 Church Street, New York, has been organized to operate a plant in the application of coatings of aluminum, zinc, tin, lead, etc. It will lease necessary appliances and do such work on its own premises. Arnold V. Schrenk is president.

The Ausman-Mattison Hardware Co., Syracuse, N. Y., incorporated with $45,000 capital stock, will acquire and continue a business as dealer in general hardware products.

Robert Linder, Inc., care of B. H. Geertsema, 320 Fulton Street, Jamaica, N. Y., plans to organize as manufacturer of surgical instruments.

The Turbax Corporation, 331 Madison Avenue, New York, recently organized an associated company, the Cowles Engineering Corporation, Sewaren, N. J., which has taken over patents on the Turbax washing machine. The factory is located at 164 Fremont Street, Worcester, Mass. All manufacturing arrangements are closed. R. C. Taylor is one of the heads.

The Sargent-Building Specialties Co., Inc., 16 Warren Street, New York, recently incorporated, will manufacture a few automotive specialties and also act as manufacturers' representatives. A. E. Wirth is one of the heads.

The El Dorado Advertising & Posting Co., Little Rock, Ark., has been organized to build outdoor advertising equipment. It has its own plant, but will be in the market from time to time for material and equipment. C. V. Hoke is one of the officials.

George H. Court, A. M. Ernst and Major F. Wesson, formerly connected with Topping Brothers, have organized the firm of Court, Ernst & Wesson, Inc., to deal in iron, steel and like products. Office and warehouse are at 121-41 Pacific Avenue, Jersey City, N. J.

Sword Burners, Inc., has been organized as a distributing company in Philadelphia for products of the Sword & Kimber Co., 4861 Stenton Avenue, Philadelphia, manufacturer of oil burners. I. M. Nelson and A. B. Nelson, who has had wide experience in tank construction, are the principals.

The Stacey Brothers Gas Construction Co., Cincinnati, has been incorporated with $400,000 capital stock, to manufacture gas holders, gas plant equipment, steel storage tanks, etc. It takes over a business organized in 1915 and will continue the fabrication of steel required in these products, and will also include a general line of heavy steel plate and structural work. J. E. Stacey is president.

Widmayer Steel, Inc., Metropolitan Bank Building, Washington, has been organized with $50,000 capital stock, to operate a general steel business and to execute structural designs. Its principal business will be in engineering and sales in connection with reinforcing bars and specialties. It is also planned to handle miscellaneous building products and plain structural shapes. John J. Widmayer is president.

The Paulson Tools, Inc., Wallingford, Conn., capitalized for $50,000, $42,500 paid in, has erected and equipped a plant and is in production on tools used in railroad shops, both hand and pneumatic types. Charles A. Gorden is secretary.

The Potter Fence & Wire Products Co., 137 State Street, New Haven, Conn., has started a business to manufacture a general line of wire goods, principally fencing, but also window guards, heavy wire cloth, machinery guards, etc. Machinery has been installed. The company is interested in manufacturers' catalogs of items that might be carried in this general line. Edward R. Potter, who is president, was until recently secretary of the John P. Smith Co.

The Ever Hot Heater Sales Co., 15 East Fayette Street, Baltimore, has been formed to act as distributor of heating apparatus. N. W. Hamill is president.

The Radio Industries Corporation, 131 Duane Street, New York, recently incorporated under Delaware laws with capital stock of $1,250,000, is a reorganization of an established company, manufacturing various radio lines. Considerable extension of activities is planned. B. Gould is one of the officials.

The Dunn Steel Products Co., Plymouth, Mich., recently incorporated, succeeds to a business established five years ago in Detroit. Some time ago a plant was purchased at Plymouth and additional equipment installed. The company plans to double its production next fall.

The Jorgensen Mfg. Co., 122 West Jefferson Avenue, Detroit, has been incorporated with $50,000 capital stock to

manufacture coin counting machinery. It takes over a going business and plans to add some larger machines to the line.

The Dayton Electric Service Co., Dayton, Ohio, has been incorporated with a capitalization of $15,000. James A. Hartman and E. H. Leedom are the incorporators. The company has been engaged in the motor repair business for the past three years at 24 North Canal Street.

The American Flexible Wheel Co., Cincinnati, manufacturer of a new resilient automobile wheel, has established offices at Third and Walnut Streets. The company's product is being made under contract by the Pollak Steel Co., Cincinnati. Officers of the company are Gerson J. Brown, president; Samuel S. Lord, vice-president; and Edgar S. Freiberg, secretary-treasurer.

The Springfield Refining Co., Springfield, Ohio, has been incorporated with a capitalization of $50,000. The company will compound lubricating oil. Various grades will be prepared for lubricating automobiles, motor trucks, and factory purposes. A plant site will be secured soon. Equipment has been ordered. Among the stockholders are J. B. Cartmell, Arthur R. Hill and L. C. Sturgis.

The Old Colony Steel Corporation, 37 West Van Buren Street, Chicago, recently incorporated with $50,000 capital stock, will sell steel bars, bands, small angles, channels and special sections. These products are rolled under contract by a mill from billets furnished by the Old Colony company. Officers are: President, J. M. Thomas; vice-president, E. E. Stackhouse; secretary-treasurer, S. J. Thomas.

The Edward H. Wilson Mfg. Co., 2430 Third Avenue, Moline, Ill., recently incorporated with $975,000 capital stock, has taken over the assets and business of the Moline Body Corporation, manufacturer of automobile bodies and metal trim, and will continue the business as heretofore carried on without any change except that the assets of the General Battery & Supply Co., East Moline, and the Mineral Rubber Products Co., Moline, also have been purchased and their products will be added to the present lines of the former Moline Body Corporation. No changes or additions in plant or equipment are contemplated.

The Sylvan Sky Light Co., 1444 North Kingsbury Street, Chicago, recently incorporated with $10,000 capital stock, manufactures ridge ventilating sky lights. No additional equipment will be required. Officers are Joseph Sylvan, president; Edythe Sylvan, vice-president; and Florence Brown, secretary-treasurer.

The Sedgwick Stamping Co., 1727-35 Sedgwick Street, Chicago, recently incorporated with $25,000 capital stock, has leased a two-story plant, 75 x 125 ft. Equipment thus far installed includes six stamping presses, drill presses, lathes, screw machines and various other tools. Miscellaneous stamping work will be done, including the manufacture of toy telephones, stop lights, tail lights, etc. Officers are S. Simon, president; D. Kahn, vice-president; and M. Kahn, secretary-treasurer.

Thompson Wire Co. Will Establish Branch at Worcester, Mass.

WORCESTER, MASS., April 7—The Thompson Wire Co., Boston, which operates a plant in the Dorchester district for the manufacture of flat wire and cold strip steel, has purchased the industrial property on Stafford Street, Worcester, recently occupied by the H. I. Gould Box Co., and will establish branch work on the premises for the manufacture of wire specialties, notably in high-carbon steels. The Boston mill will be continued as it is and the office will remain in that city, while the Worcester plant will be operated as a branch.

The Stafford Street property consists of two acres, having a frontage of 360 ft. on the Boston & Albany Railroad and is served by a spur track. Work of remodelling the present buildings will begin immediately, and also the erection of a new building, 60 by 105 ft. It is planned to make still further extensions in the near future, in connection with the development of the line to larger sizes of high carbon steel wires.

George M. Thompson, president and treasurer of the company, established the business about two years ago, soon after he resigned the office of general manager of the Wickwire Spencer Steel Corporation. He had been identified with the wire business in Worcester for 30 years, with the Spencer Wire Co. and its successor, the Wickwire Spencer Co. The Worcester branch will be under the management of Giles S. Pease, who has been associated with the Wickwire Spencer Co. and previously with the Spencer Wire Co., as plant engineer. Mr. Pease is a graduate of the Worcester Polytechnic Institute, class of 1901.

Trade Changes

The D. L. Wilkoff Steel Co., scrap iron and steel, Union Trust Building, Pittsburgh, announces the liquidation of its business as of April 1. D. L. Wilkoff and H. T. Feinberg, active members of the firm, are now associated with the United Iron & Metal Co., 434 Diamond Street, Pittsburgh.

The Matthiessen & Hegeler Zinc Co., La Salle, Ill., has changed its corporate style to the Continental Zinc Co.

The Service Tool Corporation, manufacturer of milled teeth files, has moved main office and business from Newark, N. J., to Latrobe, Pa. A detroit branch office and warehouse has been established in connection with the warehouse of the Vanadium-Alloy Steel Co., at 5219 Trumbull Avenue, Detroit. W. S. Morse, formerly Detroit selling agent, is no longer affiliated with the Service Tool Corporation.

The Technical Service Co., industrial consultant, has moved to larger quarters in the Woolworth Building, New York.

The National Carbon Co., which has maintained an emergency brush finishing plant for the past two years at 237 East Forty-First Street, New York, has moved into new quarters at 357 West Thirty-Sixth Street.

The Firth-Sterling Steel Co., E. S. Jackman & Co., agents, has moved its Los Angeles, Cal., office from 336 East Third Street to larger quarters at 2154 Santa Fe Avenue. William Ely Nelson, who has been with the company almost 25 years, is Pacific Coast representative.

The Foote Brothers Gear & Machine Co. has made arrangements for representation of its speed reducers and gear products in Mexico by John A. Park, Gran Hotel, Avenida Uraguay, No. 12 Mexico City.

Directors of Gardiner & Lewis, Inc., engineer and manufacturer specializing in protection against water and corrosion, 30 Church Street, New York, on March 28 changed the firm name to Lewis Asphalt Engineering Corporation.

The American System of Reinforcing and its associate company, the American Wire Fence Co., will move from the Otis Building, Chicago, to the Union Trust Building, May 1.

The Dayton-Dowd Co., maker of centrifugal pumps, Quincy, Ill., has opened a Detroit office at 841 David Whitney Building, E. E. Maher and E. P. Johnson in charge. The company has appointed the Power Equipment Co., 131 State Street, Boston, New England representative.

Industrial News Notes

The Walworth Mfg. Co., Boston, announces the formation of the engineering products division to cooperate with the engineering, production and sales departments on the development and distribution of the new Walworth sigma steel valves and fittings for power plant and oil refinery service. John M. Olmsted has been appointed general manager of the division, with headquarters in Chicago, and Fred W. Duemler assistant manager, located in New York.

Botwinik Brothers, 21 Sylvan Avenue, New Haven, Conn., recently purchased the plant of the New Haven Carriage Co. on Water Street, New Haven, Conn., and intends within the next month to combine its entire stock in warehouses at Sylvan Avenue, 92 Orchard Street and Bridgeport, Conn., as well as other small warehouses, under one roof. The purchased plant contains over a 150,000 sq. ft. of floor space and the company plans to make it one of the largest and best equipped machinery dealers' warehouses in the country.

R. W. Shore and J. F. Funk, who have been engaged in the machinery trade in New York for several years and who recently formed a partnership under the firm name of Funk & Shore, have taken larger office space at room 1570, 50 Church Street, New York, and have at the same time been appointed Eastern sales representatives of the American Steel Package Co., Defiance, Ohio, manufacturer of steel barrels. Funk & Shore also represent the Henry & Wright Mfg. Co., Hartford, Conn., manufacturer of drilling machines and dieing machines, and have recently become exclusive representatives in the New York district for the contract (stampings) department of the Miller Lock Co., Frankford, Philadelphia.

The Corey Co., Michigan City, Ind., dealer in steel, has completed and moved into new general offices and warehouse at 1834-1840 South Fifty-fourth Avenue, Cicero, Ill. The new building contains 25,000 sq. ft. of floor space and is equipped with modern equipment for handling sheet steel. J. N. Korhumel is president. The company specializes in sheets, plates, hot and cold rolled strip.

The National Foundry & Repair Co., Dayton, Ohio, has been incorporated for $50,000. It succeeds the National Stove Repair Co., Dayton, which has been in business for the past seven years at Bolender and the Baltimore & Ohio Railroad. Martin Block is president of the new firm.

DEVELOPING MARINE STANDARDS

Committee Meetings to Discuss Insulation, Pipe Flanges, Refractories, Etc.

WASHINGTON, April 7.—Meetings will be held this week in Philadelphia and New York by nine groups of experts who are serving as members of subject committees of the American Marine Standards Committee, which is seeking to develop standards to make the operation of American ships more economical and more efficient. Eight of the sessions will be held in the offices of the Emergency Fleet Corporation, New York, and one was held in the office of the Fleet Corporation yesterday in Philadelphia. This latter was the sixth session of the Committee on "Insulation of Piping and Machinery." Today is being given over to an all-day session in New York of the Committee on "Rules for Boilers and Pressure Tanks."

Two committees will meet Wednesday. The morning session will be that of the committee on "Care and Operation of Diesel Machinery," this committee being headed by Harte Cooke, senior engineer McIntosh & Seymour Corporation, Auburn, N. Y. In the afternoon the committee on "Structural Insulation on Ships," headed by A. D. Woods, naval architect Maintenance and Repair Department, Emergency Fleet Corporation, will meet for its second session.

On Thursday morning the committee on "Shafting, Propeller Hubs and Stern Tube, Line Shaft and Shaft Strut Bearings" will hold its fifth session. The committee chairman is W. W. Smith, chief engineer Federal Shipbuilding & Dry Dock Co., Kearny, N. J. In the afternoon the second session of the committee on "Life Boats and Life Rafts; Their Stowage, Handling and Equipment" will be held. Capt. E. E. Crowley of the Export Steamship Corporation, New York, is chairman.

The committees which will meet on Friday will be those on "Pipe Flanges and Manifolds" and on "Metal Berths, Including Spring Matresses." The first of these, headed by R. Warriner, chief engineer Bethlehem Shipbuilding Corporation, Quincy, Mass., has met once before. The second committee, of which B. D. Pender, head of the passenger ship equipment section of the Emergency Fleet Corporation, New York, is chairman, is also holding its second session.

The meeting on Saturday morning will be the third session of the committee on "Fire Brick and Refractories," the chairman of which is A. C. Reed, Materials engineer Emergency Fleet Corporation.

President Warner Looks for Fair Business This Year

YOUNGSTOWN, April 7.—President Jonathan Warner of the Trumbull Steel Co., Warren, voices confidence that business will be maintained this year in fair volume and that no adverse developments are ahead. He expresses himself as hopeful that there will be reasonably steady employment for workers in the industry and fair profit for business conducted efficiently.

Leaders of the independent steel industry in this section generally agree with Mr. Warner that the business prospect is promising. The Trumbull company is operating at present close to capacity, and its executive feels maintenance of 75 to 80 per cent production is possible.

"There is a little extra capacity in the steel industry," Mr. Warner points out. "Some producers insist on cutting prices to get capacity operations. Eventually it will be found to be much better policy to take such business as will yield a fair profit and leave the rest alone. This will give everyone a fair share and a reasonable return."

He declares conditions are not as bad as they are pictured in some quarters, that too many business men are expecting boom business, instead of just the sound, normal kind which is essential to stability.

Concerning foreign competition, Mr. Warner states it will be some time before foreign producers get in position to be dangerous, while in the meantime their costs are rising and ours are falling.

STEEL AND INDUSTRIAL STOCKS

The range of prices on active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	73½	81	Inland Steel.....	40⅝	42
Allis-Chal. pf....104		104	Int. Harvester...	99¼	104
Am. B. S. & Fdy.	90¼	95	Int. Har. pf.....114⅝		114⅝
Am. B. S. & F. pf.	110¼	110½	Jones & L'hlin..113⅝		113⅞
American Can...158¼		166⅝	Lima Loco.....	61¼	63½
Am. Can pf.....117⅝		118	Nat.-Acme	4⅝	4⅝
Am. Car & Fdy.194		202⅝	Nat. En. & Stm..	30½	31⅝
Am. C. & F. pf..120⅜		122¼	N. Y. Air Brake.	44¼	46⅝
American Loco..119		125	Otis Steel.....	8⅝	10⅞
Am. Loco pf.....118⅝		119	Otis Steel pf.....	53	60
Am. Radiator....	92⅞	96⅝	Pressed Steel Car	52½	53½
Am. Radiator pf.130¼		130¼	Pressed Steel pf.	83	83
Am. Stl. Fdr....	47½	49½	Replogle Steel...	12⅞	14
Baldwin Loco...107		114⅝	Republic	45¼	47⅛
Baldwin Loco pf.110		110	Republic pf.....	88	88
Bethlehem Steel..	39⅝	41½	Sloss-Sheffield ...	80½	84⅝
Beth. Stl. 7% pf.	95	95	Transue-Wms. ...	25¼	25½
Beth. Stl. 8% pf.110¼		110½	Un. Alloy Steel..	24¼	26½
Chic. Pneu. Tool.	81⅝	84½	U. S. Pipe 152		175
Colorado Fuel...	32½	34½	U. S. Pipe pf....102		103
Crucible Steel...	64½	68⅞	U. S. Steel.....112⅝		116½
Crucible Stl. pf..	93	93½	U. S. Steel pf....122½		123
Deere pf.....	90⅝	91¼	Vanadium Steel..	26½	27
General Electric.251½		265	Va. I., C. & Coke	36⅛	36½
Gt. No. Ore Cert.	27½	34¼	W'house Air Br.	98	99½
Gulf States Steel.	67½	71½	Youngst'n S. & T.	63	65

Steel Co. of Canada Shows Lower Profits

In a pamphlet report of the Steel Co. of Canada, Ltd., manufacturing profits for 1924 are shown at $2,510,826, compared with $2,996,580 for 1923. Total profits were $2,867,310 against $3,284,467. Surplus for the year after all charges was $264,768, and the total profit and loss balance on Dec. 31, 1924, stood at $8,835,016. Current assets are shown at $13,103,522 and current liabilities at $1,352,219. Working capital has been increased by $664,000 and reaches a total of $11,943,810. Inventories are shown at $6,011,731, as against $6,673,480 for the previous year. Accounts receivable are $2,231,047 and cash on hand $593,578. Robert Hobson, president, said to stockholders: "During the first six months of 1924 business was fairly good, but fell off badly in the latter half of the year. We not only experienced a reduced demand for our goods, but had to contend with severe competition from the United States. Since our last report the protection on many of the lines which we manufacture was either reduced or removed entirely. This refers particularly to materials entering into the production of agricultural implements."

Good Year for American Rolling Mill Co.

Although 1924 earnings for the American Rolling Mill Co. were somewhat below those for 1923, its recent income account shows a notable earning power. Net income for last year was $2,845,055, after depreciation, Federal taxes and interests, compared with $3,472,893 in 1923. Net sales throughout the year were $25,679,818 against $26,691,234 in 1923 and $20,294,205 in 1922. Deductions for interest were nearly four times those in 1923 and surplus last year was $377,164 as compared with $1,059,525 in the preceding year.

Harold J. Linkert has asked the Federal court at Dayton, Ohio, to discharge him as special master for the National Motors Corporation. He asserts that W. I. Ohmer, Dayton, has paid him the full $250,000 purchase price of the Dayton plant.

Following contest proceedings started by Sanford Brown, receiver for the Triumph Electric Co., Cincinnati, to combat involuntary bankruptcy action against the company in the United States District Court, Cincinnati, Mr. Brown was named receiver pending a jury trial on the bankruptcy suit. Attorneys of the company have consented to the arrangement and Mr. Brown will continue to operate the business as a going concern. J. C. Hobart, president of the company, denies that the concern is insolvent, and states that it has assets of $1,100,000 and liabilities of $715,000. Capital stock is $1,250,000 of which $650,000 has been issued.

The 1924 report of the Consolidated Mining & Smelting Co., Ltd., Montreal Que. with mines and plant at Trail, B. C., showed net profits of $4,341,014, as compared with $2,401,346 in 1923. After providing for bond interest, $4,069,023 was transferred to the profit and loss account.

Machinery Markets and News of the Works

BUSINESS IS LISTLESS

Machine-Tool Markets Generally Dull, Though Cincinnati Reports Improvement

Some Manufacturers Say Their Sales in March Were Ahead of Those of February

Moderate sales are still the rule in the machine-tool trade. It is difficult to make comparisons that show the trend of business because conditions have ruled pretty much the same for the past two months. Some manufacturers say that March sales were slightly better than those of February, but generally speaking all markets are dull.

With the possible exception of the automobile and tractor companies, there is very little buying activity among industrial companies. Some railroads continue to buy in a small way, but the several large railroad lists issued in the past several weeks are still pending.

Among the more important buyers of the past week were the Westinghouse Air Brake Co., Hudson Motor Car Co., Chicago Union Station Co., Chicago, Rock Island & Pacific Railroad, Western Electric Co., Ford Motor Co.

New York

NEW YORK, April 7.

THE local machine-tool market is lacking in developments of interest. Buying of tools continues in a moderate way, but the situation presents no new signs of encouragement. One company which did an unusually good business in March in this territory attributes its success to putting forth extra sales efforts. However, the occasional report of a fair volume of business in certain lines does not mean that machine-tool business as a whole is satisfactory. Among the more important purchases of the week were the following: Chicago, Rock Island & Pacific Railroad, two 90-in. wheel quartering machines; International Petroleum Co., for shipment to Toronto, Ont., a 1500-lb. steam hammer; Oil Well Supply Co., Pittsburgh, a 1500-lb. steam hammer; Ford Motor Co., a special 2-spindle radial drilling machine; Industrial Works, Bay City, Mich., a 30-in. x 12-ft. engine lathe.

The Dickinson Cord Tire Corporation, 220 West Nineteenth Street, New York, manufacturer of patented machinery for the production of cord tires, has acquired the former plant of the Jewell Filtration Corporation, Nutley, N. J., comprising five buildings with a total of 50,000 sq. ft. and will concentrate operations at this location. The present plants at Long Island City and address noted will be removed to the new site and additional equipment installed. Frederick A. Dickinson is president.

The Board of Transportation, City of New York, 49 Lafayette Street, has awarded a general contract to the P. T. Fox Contracting Co., 154 Nassau Street, for the erection of its electrical repair shop at the Coney Island yard to cost $200,000. The board will take new bids for inspection shops at the Westchester Avenue and 239th Street yards, for which bids recently received have been rejected. J. G. Delaney is chairman.

The Swedish Chamber of Commerce of the United States, 2 Broadway, New York, has received an inquiry (No. 7) from a company in Sweden desiring to get in contact with American manufacturers of portable electric grinders.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until April 21 for 430,000 ft. steel box straps, schedule 3545; and 6000 brass bolts, schedule 3539, for the Brooklyn Navy Yard.

The Silmig Machine Works, 216 Centre Street, New York, has inquiries out for a lathe, 16-in. swing.

The Quaker City Metal Bed Corporation, 183 Lewis Street, New York, has awarded a general contract to W. J. England, Jr., 4-6 Berry Street, Brooklyn, for a one-story plant, 100 x 100 ft., at 204-8 North Fourteenth Street, Brooklyn, to cost $37,000.

The American Chamber of Commerce in London, Aldwych House, Aldwych, Kingsway, London, W. C. 2, England, has received an inquiry from a British company desirious of getting in touch with American manufacturers of petrol paraffin marine engines from 10 to 50 hp.

Rohe Brothers, Inc., 527 West Thirty-sixth Street, New York, refined oils, etc., has filed plans for a one-story machine and repair shop, 25 x 100 ft., at 530-32 West Thirty-seventh Street.

The J. & B. Auto Co., 12 Division Street, Amsterdam, N. Y., will ask bids in May for a two-story service, repair and garage building, 70 x 120 ft., estimated to cost $70,000 with equipment. Leland H. Niles, 9 Grove Street, is architect.

Richard Hellman, Inc., 606 Northern Boulevard, Long Island City, manufacturer of food products, has awarded a general contract to William Crawford, 7 East Forty-second Street, New York, for a two-story machine shop, automobile service and garage, 80 x 100 ft., for company cars, to cost $60,000 with equipment. Richard D. Fine, 103 Park Avenue, New York, is architect and engineer.

The Graham & Norton Co., 126 Eleventh Avenue, New York, manufacturer of elevator equipment and devices, is said to be planning for the installation of additional equipment.

The Manhattan-Durant Co., 1757-59 Broadway, New York, local representative for the Durant and Star automobiles, has leased the entire building at 614-20 West Fifty-seventh Street, totaling 40,000 sq. ft., for a new service and repair works.

The Public Service Electric & Gas Co., Terminal Building, Newark, N. J., is arranging a fund of $30,000,000 for extensions and improvements during the year. This amount is separate from an appropriation of about $20,000,000 being used for the new steam-operated generating plant at Kearny, N. J., now in course of erection. The forthcoming work will include a new automatic substation at Trenton to cost close to $2,000,000 with equipment. Plans have been filed for the construction of a substation at Van Keuren Avenue and Duffield Street, Jersey City, to cost $155,000 with equipment.

The Blue Diamond Service Co., 100 East Forty-second Street, New York, has filed plans for a two-story automobile works, for parts, etc., 50 x 100 ft., to cost $32,000. Y. M. Karekin, 136 Liberty Street, is architect. Vernon P. Parker is president.

C. W. Bigg, director of the Derwent Foundry Co., Derby, England, care of R. F. Munro, British Empire Chamber of Commerce, 25 Broadway, New York, is now visiting this country with view to purchase special machinery for grinding lawn mower cylinders and bottom blades, as well as special machinery for the manufacture of lawn mowers, and is interested in getting in touch with American manufacturers in position to furnish such needs. The Derwent company specializes exclusively in machine molded repetition castings.

Charles E. Jeffries & Co., Inc., 1020 Straus Building, 565 Fifth Avenue, New York, desires to get in touch with firms equipped to manufacture vending machines in quantity. The company plans to place this contract within the next two weeks. Charles E. Jeffries is president.

R. Cram & Co., 7-11 Water Street, New York, has received an inquiry for tinning equipment and is desirous of getting in touch with makers of such equipment.

The George W. Dunham Corporation, Utica, N. Y., manufacturer of washing machines, has acquired a plant at New Hartford, N. Y., which will be equipped for manufacturing.

The Crane Market

IN the New York district the past week was probably the quietest of the year, both in sales and inquiries for overhead and locomotive cranes. Activity was almost totally sustained by a fair volume of old inquiries, several believed to be on the point of closing. The Phoenix Utility Co., 71 Broadway, New York, has placed the order for the 100-ton overhead crane for Trinidad, Tex. The Stirling Foundry, Stirling, N. J., is in the market for a 5-ton, 27-ft. span, single I beam crane, either new or second hand. The West Virginia Pulp & Paper Co., 200 Fifth Avenue, New York, in the market for two 15-ton electric hoists, is reported to have encountered some difficulty in obtaining prices on such large capacity equipment.

An inquiry is in the market from Argentina for 129 portal and semi-portal, cargo-handling cranes for Buenos Aires and other ports, bids to open in May. The total cost of the equipment is estimated at about $2,000,000.

The crane market in the Pittsburgh district has been quiet lately with only three small cranes and a fairly large conveyor placed in the past week. Another group of cranes for the Homestead works of the Carnegie Steel Co. will probably be placed in the next fortnight; bids are in and the recommendation of the engineers is expected to go to New York for approval this week.

Among recent purchases are:

New York Central Railroad, New York, a 10-ton, 46-ft. span traveling gantry crane from an eastern builder.

Baltimore & Ohio Railroad, Baltimore, three 25-ton locomotive cranes from the McMyler-Interstate Co.

Agar-Cross & Co., New York, exporters, a 15-ton special chain block for export to South America, from the Chisholm & Moore Mfg. Co.

West Penn Railway Co., Pittsburgh, a 10-ton overhead crane from the Northern Engineering Works.

Plastergon Wall Board Co., Buffalo, a 5-ton, 76-ft. 5-in. span overhead crane from the Northern Engineering Works.

Penn Iron & Steel Co., Creighton, Pa., a 3-ton overhead crane from the Northern Engineering Works.

Bethlehem Steel Co., Bethlehem Pa., a 20-ton, 80-ft. span crane from the Morgan Engineering Co.

Vermont Marble Co., Proctor, Vt., a small capacity electric traveling crane, 85-ft. span, from an unnamed builder.

Philadelphia

PHILADELPHIA, April 6.

HEACOCK & HOKANSON, 1211 Chestnut Street, Philadelphia, architects, have been engaged by the Atlas Electric Co., 1218 Hamilton Street, manufacturer of electrical equipment, to prepare plans for a two-story factory, 56 x 75 ft., on site lately acquired at Green and Percy Streets. John G. McMahon and Valentine Scott head the company.

The Thomas H. Dallett Co., 165 West Clearfield Street, Philadelphia, manufacturer of pneumatic tools, etc., has awarded a contract to the Truscon Steel Co., 1505 Race Street, for an addition.

The Leeds & Northrup Co., 4901 Stenton Street, Philadelphia, manufacturer of electrical measuring instruments and other precision equipment, has awarded a general contract to William R. Dougherty, 1608 Sansom Street, for a two-story and basement addition, 60 x 100 ft. Morris E. Leeds is president.

The United States Rubber Co., Broadway and Fifty-eighth Street, New York, manufacturer of automobile tires and mechanical rubber goods, has leased the factory of David Weber & Co., Fifth and Locust Streets, Philadelphia, heretofore used for the manufacture of paper boxes and containers, for a new factory branch. The Weber company is arranging for the erection of a three-story plant to cost about $100,000.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received the following inquiries: (43390) from N. V. Crossley Motoren, Weteringkade 7, The Hague, Netherlands, desiring to get in touch with American manufacturers of marine oil engines from 5 to 500 hp., and small paraffin or crude oil engines, vertical and horizontal, from 2 to 10 hp., also manufacturers of oil burners (lamps) with vertical burners for preheating hot bulb oil engines; (43381) from the Union Commerciale, 5 Rue de la Paix, Oran, Algeria, wishing to get in contact with American manufacturers of textile machines suitable for spinning sisal to make twine for reapers; (43403) from R. V. Stackelberg, Helsingfors, Finland, desiring to get in touch with American manufacturers of electrical appliances and electric-operated refrigerating equipment; (43393) from Andres Balestrieri, Calle Cerrito 776-78, Buenos Aires, Argentina, desiring to get in contact with American manufacturers of shovels, spades, stamped metal, builders' and railroad hardware, locks, wheelbarrows, automobile tools, carpenters' and cabinet-makers' tools, wagon and carriage builders' tools, tin plate, safety electric lamps for miners, bolts, nuts, rivets, etc.; (43399) from the Milton E. Springer Co., 31-45 Plaza Santa Cruz, Manila, Philippine Islands, wishing to get in touch with American manufacturers of ice-making and refrigerating machinery; (43396) from the Compania Urbana de Transportes, Carrera 5, No. 184-86, Cali, Colombia, desiring to get in touch with American manufacturers of automobile repair parts and accessories, and (43406) from Zabala y Aguiar, P. O. Box No. 2336, Havana, Cuba, desiring to get in touch with manufacturers of mills for grinding limestone or carbonate of lime to a powder form.

Abraham Levy, Real Estate Trust Building, Philadelphia, architect, has awarded contract to Samuel H. Levin, 1631 South Fifth Street, for a three-story and basement automobile service, repair and garage building, 68 x 150 ft., to cost $100,000 with equipment.

The John E. Thropp Sons' Co., Lewis Street, Trenton, N. J., manufacturer of rubber mill machinery, etc., has awarded a general contract to Henry E. Baton, Inc., 1713 Sansom Street, Philadelphia, for its one-story machine shop, 80 x 160 ft., to cost $135,000 with machinery.

The Board of Education, Reading, Pa., plans the installation of manual training equipment in its proposed three-story senior high school at Thirteenth and Douglas Streets, estimated to cost $1,500,000, for which bids will soon be asked on a general contract. Ritcher & Eller, 147 North Fifth Street, are architects.

Fire, March 30, destroyed a portion of the plant of the Williamsport Paper Box Co., Williamsport, Pa., with loss estimated at $100,000 including machinery. It is planned to rebuild.

The K. D. Mfg. Co., 510 North Plum Street, Lancaster, Pa., manufacturer of metal products, has plans for a one-story addition, 50 x 120 ft. Henry Y. Shaub, 20½ North Queen Street, is architect.

The Glassine Paper Co., West Conshohocken, Pa., recently organized, has taken over the local plant of the Diamond State Fibre Co. and will soon begin production for glassine and grease-proof papers. Lawrence C. Glass is secretary and treasurer.

The International Motor Co., Allentown, Pa., manufacturer of motor trucks and parts, has filed plans for a one-story addition estimated to cost $75,000 with equipment.

The Board of Education of Radnor Township, Wayne, Pa., O. H. Wolfe, president, Philadelphia National Bank Building, Philadelphia, plans the installation of manual training equipment in its proposed two-story high school estimated to cost $400,000, for which revised plans are being drawn by I. T. Catherine, Nineteenth and Ludlow Streets, Philadelphia, architect.

The Eagan & Johnson Co., Crum Lynne, Pa., manufacturer of iron and steel castings, etc., has awarded a general contract to the McClintic-Marshall Co., Morris Building, Philadelphia, for a one-story addition, 50 x 200 ft., with extensions 50 x 80 ft. and 50 x 60 ft.

The Red-Haven Coal Co., Dime Bank Building, Scranton, Pa., is disposing of a bond issue of $250,000, a portion of the proceeds to be used for the purchase of additional equipment to develop production to a maximum of 600 tons per day. Clinton Confehr is president.

The Pennsylvania School of Industrial Arts, Broad and Pine Streets, Philadelphia, is considering the erection of a one-story mechanical and industrial shop.

Fire, April 2, destroyed the plant and equipment of the Wetmore-Henderson Lumber Co., Sixth and Chestnut Streets, Warren, Pa., with a loss of $100,000. A one-story brick power plant which was burned will be rebuilt.

Chicago

CHICAGO, April 6.

THE local machine tool market is listless and business is secured only after persistent effort and a careful combing of all possible prospects. On the whole, operations of industrial plants are dragging, although exception must be made for the tractor and automobile industries. Tractor plants are on a 100 per cent basis and the Nash Motors Co., one of the two important automobile builders in this territory, is producing from 200 to 225 cars a day at its Kenosha plant, as compared with a record made during the war of 180. Most of the current sales consist of scattered orders for individual machines.

The Chicago Union Station Co. has closed for an engine lathe, a heavy duty shaper, a sliding head drill press, a high speed drill press, two floor grinders, a power saw, and a pipe machine, involving an aggregate of between $8,000 and $9,000. The Rock Island Lines, which issued inquiries for nine machines, as reported in THE IRON AGE of Feb. 26, has closed for at least a portion of the list, including a 15-in. light duty lathe, a 20-in. drilling machine, a staybolt machine and a planer. The Union Pacific System is in the market for three sensitive drill presses for delivery at Albina, Ore., on the Oregon Washington Railroad & Navigation Co., a subsidiary. The Western Electric Co., Chicago, has purchased a 12-in. engine lathe and the American Can Co. has closed for a 16-in. lathe for its Waukegan, Ill., plant. The Blackmer Rotary Pump Co., which is moving its plant from Petoskey, Mich., to Grand Rapids, has placed orders for a 20-in. shaper and an 18-in. engine lathe. The Automatic Electric Co., Chicago, has closed for an automatic disk grinder. The William Ganschow Co., Chicago, has placed orders for a 4½-ft. radial drill and an arbor press.

The Bates Valve Bag Co., 8200 South Chicago Avenue, Chicago, has awarded contracts for a one-story factory, 120 x 200 ft., to cost $50,000.

Holton, Seelye & Co., builders, 140 South Dearborn Street, Chicago, will construct a one-story machine shop, 100 x 220 ft., at 1234-50 East Ninety-second Street, to cost $35,000.

The A. Plamondon Mfg. Co., manufacturer of machinery, 5301 South Western Avenue, Chicago, will construct an additional story, 61 x 97 ft. to a factory at that address, to cost $10,000.

Heuer Brothers, 1510 Blue Island Avenue, Chicago, will build a two-story automobile body manufacturing plant, 49 x 92 ft., to cost $9,000.

The Bauer Mfg. Co., the Bauer Taxicab Co. and the Bauer Tire & Rubber Co., now at 119 East Thirtieth Street, Chicago, have purchased factory buildings on 147th Street, near the Ingalls-Shepherd Co. plant from the Steel Fabricating Corporation, and will start operations shortly. The company will manufacture taxicabs.

The Utensils Co., 303 East Columbia Street, Fort Wayne, Ind., has purchased a site near the International Harvester Co. plant for a new factory, the first unit of which will cost $31,000, exclusive of equipment.

The Sheets-Rockford Silver Co., recently organized, has a plant adjacent to the Sheets Paper Box Co., at 1008 Mulberry Street, Rockford, Ill., and will manufacture hollow ware, silver and plated goods beginning May 1.

William Schukraft, 943 Fulton Street, Chicago, manufacturer of automobile truck bodies, has plans for a three-story factory on West Washington Street, 140 x 225 ft., to cost approximately $275,000 with equipment. E. H. Freeman, 64 West Randolph Street, is architect.

The Peerless Chain Co., Front and Wallace Streets, Winona, Minn., has awarded a general contract to H. W. Seidlitz, Winona, for a one-story and basement addition, 40 x 120 ft. Dennis & Knowles, 63 West Fourth Street, are architects.

The City Council, Carrington, N. D., is planning the early purchase of a centrifugal pump, about 300 gal. per min., and one 25-hp. engine. L. P. Wolff, Globe Building, St. Paul, Minn., is engineer.

The Kellogg Box Board Co., care of Moore & Neely, 219 East Superior Street, Chicago, engineers, is having plans prepared for a new factory to cost $150,000 including equipment. The project will include a one-story power house.

The Central Cold Storage Co., North Clark Street and the Chicago River, Chicago, is disposing of a bond issue of $1,500,000, the proceeds to be used for the construction of a new cold storage and refrigerating plant. L. B. Kilbourne is president.

The National Fireproofing Co., Ottawa, Ill., has tentative plans for the rebuilding of the portion of its factory destroyed by fire, March 28, with loss of $200,000 including equipment. It specialized in the production of hollow tile and kindred products. Headquarters of the company are in the Fulton Building, Pittsburgh.

The Denver & Salt Lake Railroad Co., Denver, Colo., is arranging a bond issue of about $2,500,000, the proceeds to be used for electric power equipment in connection with the electrification of the Moffat Tunnel, through the Continental Divide, west of Denver.

The Buss Metal Window Co., 2728 Nicollet Avenue, Minneapolis Minn., is considering the erection of a new one-story plant, 80 x 100 ft., for the manufacture of metal casement windows, to cost $40,000. O. W. Buss is president.

The Board of Directors, St. Luke's Hospital, 1421 South Michigan Avenue, Chicago, has plans for a one-story power plant at 1418-26 Indiana Avenue to cost $100,000 with equipment. C. C. Frost, 105 South La Salle Street, is architect.

The Illinois Northern Utilities Co., Dixon, Ill., is arranging a bond issue of $668,000, a portion of the proceeds to be used for extensions and improvements.

Cleveland

CLEVELAND, April 6.

SOME lines of machine tools are in fair demand and others are moving slowly. Turret lathes are being sold in fair volume and there is a gain in the demand for automatic screw machines. While the call for these two lines is almost wholly for single machines, one lot of four large turret lathes was placed during the week by the Westinghouse Air Brake Co., Pittsburgh, the order going to a Cleveland manufacturer. Drilling machinery, which has been very quiet, shows a slight improvement. Demand from the automotive industry continues slow, being limited mostly to orders for single machines or small lots. The Hudson Motor Car Co., Detroit, during the week placed four or five machines with Cleveland distributors. The sale of the Dodge Brothers plant is not expected to interfere with the plans to add considerable equipment to the works, although the change in ownership may delay purchases.

Electrical equipment is quite active in this territory. The Central Furnace Co., Massillon, Ohio, a subsidiary of the Central Steel Co., which is building a new blast furnace, has placed orders with the General Electric Co. for two turbo blowers each having a capacity of 50,000 cu. ft. per min. and a pressure of 18.4 to 32.7 lb., and for three 8000-kw. turbo generators for utilizing the blast furnace gas to supply some of the power for the steel plant equipment. Orders for a switchboard and motor generator sets from the same company are pending. The American Steel & Wire Co. has purchased from the General Electric Co. a 10,000-kw. turbine generator for installation at its Central furnaces in Cleveland, where considerable construction work is under way. The General Electric Co. has also taken an order from the Ohio Seamless Tube Co., Shelby, Ohio, for one 500 and one 250 hp. motor.

Makers of heavy handling equipment report a good volume of business in prospect. Inquiries are out from the Chicago territory for two material handling bridge cranes, one coming from a steel plant and another from an allied industry.

The Stevenson Foundry Co., Wellsville, Ohio, will erect a one-story addition, 60 x 130 ft. T. A. Hibbens is president and general manager.

The Tucker Boiler Co., Newark, Ohio, contemplates the erection of a factory, 60 x 137 ft., for the manufacture of tanks and boilers. Chandler J. Tucker is president.

The Hobart Mfg. Co., Troy, Ohio, is having plans prepared for a factory for the manufacture of food machinery. A. J. Stouder is president.

The Union Seamless Tube Co., Bellevue, Ohio, contemplates the erection of a new plant to replace one recently burned.

The Toledo Furnace Co., subsidiary of Pickands, Mather & Co., Cleveland, has placed a general contract with the Variety Iron & Wire Co., Cleveland, for a pumping station, the first unit to have 10,000 kw. capacity. It will be erected in connection with the new power plant being built at the company's blast furnace at Toledo, Ohio.

The City of Minerva, Ohio, has completed plans for a $50,000 sewage disposal plant that will require one centrifugal pump and equipment. McClaskey & Reese, Renkert Building, Canton, Ohio, are the engineers.

Norwalk, Ohio, has had plans prepared for a filtration plant. Granville E. Scott, Norwalk, is the architect and engineer.

The Union Metal Mfg. Co., Canton, Ohio, contemplates erecting a factory addition at an estimated cost of $40,000.

The Bruns Lime Works, Inc., Woodville, Ohio, is taking bids on a $1,000,000 plant which will include power house, six dry kilns and a hydrating plant. D. C. Henley is general manager and S. W. Jameson, Waldorf Hotel, Toledo, Ohio, is construction engineer.

The Fairfield Brick Co., Zoarville, Ohio, will build a factory which will include a one-story dryer and machine shop, 74 x 180 ft. Arthur L. Limbich, New Philadelphia, Ohio, is the secretary.

The Schulte Brass Mfg. Co., Norwood, Ohio, has placed a contract for a one-story factory, 30 x 250 ft.

Walter Sheehan, 833 Shurman Avenue, Steubenville, Ohio, has organized a company to manufacture a mechanical device and plans to have all operations done by contract. He hopes to have the product on the market in 90 days and in case satisfactory arrangements cannot be made, the company will establish its own plant.

The McCaskey Register Co., Alliance, Ohio, will soon begin the construction of its proposed plant on property recently acquired at Mount Union, Ohio, estimated to cost $500,000 with machinery. It manufactures registering machines and parts. Lockwood, Greene & Co., 24 Federal Street, Boston, are architects and engineers.

Cincinnati

CINCINNATI, April 6.

AN encouraging increase in sales was noted in the local machine-tool market the past week. Many builders booked a number of good orders and prospects are bright for the closing of a generous quantity of business this week. Most large manufacturers state that the volume of sales in March was ahead of that for the previous month and are of the opinion that there will be a corresponding increase in April. Several railroads have large lists out, but buying to date has been limited. Purchases by Detroit automobile manufacturers are on the increase, according to a local machine tool executive.

Sales of planers continue good. The Cincinnati Planer Co. has sold a 42-in. planer to the American Steel Foundries, St. Louis, and also disposed of another 42-in. planer to a Chicago concern. It is reported that the Chicago buyer spent approximately $30,000 in the local market, investing in several lathes, milling machines and a radial drill. The Cincinnati Shaper Co. sold a large shaper to the Board of Education, Cleveland, and disposed of two 32-in. shapers to the Mobile & Ohio Railroad Co. The Ford Motor Car Co. placed a good sized order for shapers with this company. The New York Central Railroad bought four large lathes in this city the past week. The Niles Tool Works booked an order for two automatic lathes from the Delco Co., Dayton, Ohio. Other sales of lathes totaled a satisfactory volume. The Cincinnati Shaper Co. received orders from Philadelphia for two press brakes and also from Jamestown, N. Y. Sales of milling machines have been fairly good and the outlook is favorable. Upright and radial drill manufacturers are pleased with the trend of business which is showing a gradual but steady increase.

The Union Gas & Electric Co., Cincinnati, has begun the erection of an electric substation at Mitchell Avenue and the Baltimore & Ohio Railroad, at a cost of $12,000.

The Marietta Magazine & Torpedo Co., Marietta, Ohio, will rebuild its plant at Newark, Ohio, recently badly damaged by an explosion.

The joint business of the Dayton Automotive Regrinding Co. and the Standard Machine Co., Dayton, Ohio, began operation April 1 under the name of the former company. In the future the Dayton Automotive Regrinding Co. will build special machinery and engage in repairing, planing, milling and grinding cylinders. John R. Whyte is owner.

D. V. Purkepile and Oliver Dovel, Quincy, Ohio, have become joint owners of the P. & D. Body Works, Quincy. The company will specialize in the manufacture of school buses. Wood-working machinery has been installed to increase the output.

The Norfolk & Western Railroad Co. is contemplating improvements at Portsmouth, Ohio, which will entail an expenditure of several million dollars. Plans call for a larger round house and an increase in yard facilities.

The Ohio Edison Co. will erect a new power plant at Springfield, Ohio. Preliminary work and surveys will begin this summer, but actual construction will not start until about April 1, 1926.

The Continental Car Co. of America, Louisville, suffered a loss of $500,000 on April 3 when fire destroyed the main building and damaged other structures. Wood-working machinery destroyed constituted 80 per cent of the loss. The company is an auxiliary of the Kentucky Wagon Mfg. Co.

The City Council, Hamilton, Ohio, will rebuild the municipal electric plant at a cost not to exceed $500,000.

The Acme Boiler Works, Gallipolis, Ohio, is to remove shortly to a new site on Garfield Avenue from its present location on Grape Street, and will expand its business of making and installing steamboat boilers. It is operated by Gordon C. Greene, Cincinnati, and Charles Arthur, Gallipolis.

The L. J. Breed Equipment Co., James Building, Chattanooga, Tenn., has inquiries out for a steam shovel, about ¾-yd. capacity.

Fire, April 3, destroyed a portion of the plant of the Continental Car Co. of America, Inc., Louisville, with loss estimated at $500,000, including equipment. It is planned to rebuild.

The Tennessee Stove Works, Inc., Main Street and the Belt Railway, Chattanooga, Tenn., has tentative plans for an addition and the installation of considerable equipment. J. L. Caldwell is president.

The Standard Gas & Electric Co., Louisville, has plans under way for extensions in its Waterside Station, to include the installation of a 35,000 hp. turbo-generator and accessory equipment. H. W. Fuller is vice-president.

The Light and Power Committee of the City Council, Humboldt, Tenn., is planning a bond issue of $75,000 for improvements in the municipal electric light and power plant and waterworks. A 100,000-gal. steel water tank will be installed in connection with the water system expansion.

The Carolina, Clinchfield & Ohio Railway Co., Erwin, Tenn., has engaged Dwight P. Robinson & Co., Inc., 125 East Forty-sixth Street, New York, engineer, to prepare plans for the additions to its local shops, including steel car repair works, blacksmith and forge shop, machine and woodworking shop.

The H. C. Miller Oil Co., Cincinnati, has been incorporated to carry on a wholesale business in oil and gasoline. It will be in the market for two 12,000 to 15,000-gal. storage tanks within the next 30 days. H. C. Miller, Catherine Avenue, Norwood, Ohio, is head.

The Shartle Machine Co., 359 Dublin Avenue, Columbus, Ohio, is in the market for two 30-ton or 35-ton standard gage saddle tank locomotives, second hand.

New England

BOSTON, April 6.

APRIL starts encouragingly with inquiries for machine tools, but buying is as scattered as last month. Virtually all inquiries the past week were for single tools, with lathes, milling machines, planers and drills outstanding. Among other tools in which interest is shown is a 100-ton press wanted by a street railroad company. Although no sizable buying is anticipated this month it is generally expected that sales will exceed those for March. An engineering company gives indication of closing on miscellaneous machine-shop equipment in the near future and several other concerns are expected to place orders. New England machine-tool builders, as a whole, are not as busy as they were early in the first quarter. Some are operating around 25 per cent of capacity and a few are at a 60 per cent rate.

The Electric Storage Battery Co., 720 Beacon Street, Boston, is having plans drawn by Bigelow & Wadsworth, 3 Hamilton Place, for a new plant on Ashford Street, Brighton.

Jackson & Moreland, 31 St. James Ave., Boston, are architects for a warehouse, contract for which has just been let by the Illinois Glass Co., Alton, Ill. It will be one story, of mill construction, and there will be several plant units for which conveying machinery is required.

Construction will start early this month on a three-story, 35 x 182 ft. warehouse for the Oxford Paper Co., Rumford, Me. It will also be used for handling shipments and will be equipped with traveling cranes.

The Seth Thomas Clock Co., Thomaston, Conn., has taken bids on a general contract for a one-story addition,

72 x 100 ft., to be equipped as a plating works. Buck & Sheldon, Inc., 60 Prospect Street, Hartford, Conn., is engineer.

The Clark Brothers Nut & Bolt Co., Millidale, Hartford, Conn., is having plans drawn for a one-story addition, 45 x 145 ft., to cost approximately $42,000. W. T. Arnold, Meriden, Conn., is architect.

The Norwalk Lock Co., Norwalk, Conn., has awarded a general contract to O. F. Burghart, 37 Kent Street, Bridgeport, Conn., for a one-story addition, 20 x 72 ft.

The Cambridge Rubber Co., 748 Main Street, Cambridge, Mass, is having plans drawn for a four-story plant, 80 x 100 ft., estimated to cost $65,000. J. R. Worcester & Co., 79 Milk Street, Boston, are consulting engineers.

E. B. Stratton, 25 Arch Street, Boston, architect, has plans for a four-story automobile service, repair and garage building, 70 x 245 ft., to cost $125,000. Burtis R. Brown, 88 Broad Street, is engineer.

The New Bedford Boiler & Machine Co., 42 Frost Street, New Bedford, Mass., has plans for a four-story addition, 60 x 160 ft., to cost approximately $70,000. Leary & Walker, 908 Purchase Street, are architects.

The Bureau of Supplies and Accounts, Navy Department, Washington, is taking bids until April 14 for 2450 lb. copper tubing for the Portsmouth Navy Yard, schedule 3537.

The constructing division, United States Veterans' Bureau, Arlington Building, Washington, is taking bids until April 28 for oil-burning equipment for installation at the veterans' hospital power station, Rutland, Mass.

Botwinik Brothers, New Haven, Conn., have purchased the plant of the New Haven Carriage Co. on Water Street, and will concentrate all operations at that address. This will include the removal of the main office and warehouse at 21 Sylvan Avenue, the machine shop at 92 Orchard Street, the State Street motor department, the Bridgeport warehouse, and several other small units.

St. Louis

ST. LOUIS, April 6.

PLANS are being considered by the Wabash Railway Co., Railway Exchange Building, St. Louis, for extensions and improvements at its repair plant at North Kansas City, Mo., estimated to cost $200,000 with equipment. R. H. Howard is chief engineer.

The Chaunce Co., Centralia, Mo., is planning for the construction of a new one-story power house to cost $75,000 including equipment.

The Mobile & Ohio Railroad has purchased the following machine tools: Three Boye & Ames, 20-in. lathes; one Putnam, 42-in. lathe; two United States floor grinders; one Cincinnati 32-in. shaper and one Thompson electric flue welder.

The Massey-Harris Harvester Co., Hutchinson, Kan., is considering the construction of an addition to its assembling plant estimated to cost $30,000. M. H. Whitaker is manager.

The Skelly Oil Co., El Dorado, Kan., is completing plans for the construction of a gasoline refining refinery at Loaunn, near Smackover, Ark., to cost approximately $400,000 with equipment.

The Black River Power & Development Co., Leeper, Mo., recently organized by W. H. Meredith, Poplar Bluff, Mo., and associates, is having plans prepared by R. I. Randolph, 38 South Dearborn Street, Chicago, engineer, for the initial unit of its proposed hydroelectric generating station on the Black River, near Leeper, to cost $1,000,000.

L. R. Ray, P. O. Box 662, Pine Bluff, Ark., has inquiries out for cotton compress machinery and power house equipment.

The Braden Co., Perry, Okla., will rebuild its local oil refinery, providing equipment for a capacity of about 2000 bbl. per day. Robert Bartlett is president.

The City Council, Orlando, Okla., is planning the construction of a municipal electric light and power plant. A bond issue is being arranged.

The Jefferson Compress Co., West Sixth Street, Pine Bluff, Ark., will erect a new cotton compressing plant, 480 x 500 ft., to cost $250,000 including machinery. The work will include a one-story, steam-operated power house. H. R. Murphy, Little Rock, Ark., is architect.

The Common Council, Collinsville, Okla., is planning for the installation of pumping machinery and accessory equipment in connection with proposed extensions in the municipal waterworks estimated to cost $125,000. The Holway Engineering Co., Wright Building, Tulsa, Okla., is engineer.

The Southwest Power Co., Fayetteville, Ark., has preliminary plans for extensions in its steam-operated electric generating station to include a two-story building, 70 x 100 ft., with the installation of generators, boilers and accessory machinery to more than double the present capacity. The expansion is estimated to cost $100,000.

The Holtzman Metal Co., St. Louis, has acquired property at North Broadway and Montgomery Street, and will remodel for the manufacture of metal specialties.

The Mountain Home Electric Co., Mountain Home, Ark., has plans for extensions and improvements to its power and light plant to include installation of a 75 or 100-hp. engine-driven generator. Extensions to transmission lines, substations and other equipment are also contemplated. Wyatt H. Wolf is general manager.

Milwaukee

MILWAUKEE, April 6.

NOT in many months has there been so little activity in the foundry and machine shop industries, but at the same time employment reports furnish some reason for expecting improvement. Meanwhile there is a moderate movement of new and used machine tools, although the call is limited to necessary replacements.

The Janesville, Wis., Association of Commerce has let the general contract to the J. P. Cullen Co., local builder, for a one-story brick and concrete manufacturing building, 60 x 125 ft., at McKay Boulevard and Jerome Street, for the Northern Conveyor & Mfg. Co., which will move its business from Milwaukee to Janesville about June 1. The transfer will embrace a substantial addition to the machinery and other equipment. The principal product is a portable conveyor-hoist. Jesse B. Whitnall is president and general manager.

The Lakeside Malleable Casting Co., Racine, Wis., sustained a heavy loss by fire on March 30, which gutted the main plant, 50 x 300 ft., and destroyed the pattern shop and storage buildings. It maintains an auxiliary plant some distance from the main shop, which will provide at least a part of the needed capacity pending the reconstruction of the damaged buildings. The loss is estimated at $75,000. H. M. Osborne is secretary.

The Eau Claire, Wis., Motor Car Co., 407 South Farwell Street, has let the general contract to Schaefer & Olson, local builders, for a two-story garage, sales and service station, 53 x 125 ft., estimated to cost $45,000. It is to be ready June 15. It is distributor of the Studebaker automobile, and Fred Kappus is president and general manager.

Buffalo

BUFFALO, April 6.

ABOUT 11 acres near Syracuse, N. Y., has been acquired by the Lennox Furnace Co., Marshalltown, Iowa, as a site for a new plant for the manufacture of furnaces and other heating equipment. Work on the initial unit will begin early in the summer.

The Otis Bed Mfg. Co., 170 Florida Street, Buffalo, is planning the construction of a new one-story factory to cost $25,000, including equipment.

The Covert Gear & Mfg. Co., Lockport, N. Y., recently formed to take over the Covert Gear Co., with local plant, has arranged a working capital of $400,000 to provide for general operations and expansion. For the present production will be devoted to the manufacture of gears and automobile parts, giving employment to about 100. Other products of kindred character will be manufactured in the future when facilities are available.

The New York Central Railroad Co., Grand Central Terminal, New York, has plans for two car repair shops at Schodack, N. Y., each to be two stories, 16 x 60 ft., and 16 x 40 ft.

The Niagara, Lockport & Ontario Power Co., Buffalo, has applied for permission to take over and consolidate the Olean Electric Light & Power Co., Olean, N. Y. The purchasing company has plans for extensions in this district.

Fire, March 29, destroyed the machine shop and other buildings forming the car barns of the Southern New York Power & Railway Co., Hartwick, N. Y., with loss of $100,000 including equipment. Headquarters are at Oneonta, N. Y.

The Hirschmann Ventilator Co., 92 Main Street, Buffalo, is reported to be planning the early purchase of equipment for a branch plant at LeRoy, N. Y. The majority of machinery will be electrically operated.

The Adams Axle Co., Syracuse, N. Y., an interest of Durant Motors, Inc., 250 West Fifty-seventh Street, New York, has begun the removal of its plant from Findlay, Ohio, to its Syracuse works, which will be extended to accommodate the increase.

The Associated Gas & Electric Co., 61 Broadway, New York, has acquired the plant and property of the Depew & Lancaster Light, Power & Conduit Co., and plans for extensions in power stations and transmission lines.

The See-All Corporation, Jamestown, N. Y., recently incorporated with a capital of $100,000 by George H. Kohlbacher, 38 Linden Avenue, and associates, will erect a plant for the manufacture of a patented metal index filing system.

The Ontario & Western Railroad Co. has plans under way for the erection of an electrically operated coal trestle at Norwich, N. Y. to replace a wooden structure.

The Third & Lafayette Street Garage, Jamestown, N. Y., operating a Hudson and Essex service station, will occupy a new building, 70 x 200 ft., at Taylor and Harrison Streets, for which a cylinder reboring machine, lathe, drill press and other electrically operated equipment will be required. Carl Nelsen is president of the company.

Indiana

INDIANAPOLIS, April 6.

THE Period Cabinet Mfg. Co., Eighth and Cemetery Streets, New Albany, Ind., has awarded a general contract to Earl Embrey, Elsby Building, for a one-story addition, 40 x 176 ft., to cost $25,000. The contractor acted as architect for the work.

The Board of Sanitary Commissioners, Indianapolis, is asking bids until April 23 for equipment for the municipal garbage disposal plant, including automatic weigher, combination tanks, grease storage tanks, vacuum system, etc.

Plans are being drawn by the Terre Haute, Indianapolis & Eastern Traction Co., Tribune Building, Terre Haute, Ind., for a one and two-story car barn, machine and repair shop, 50 x 250 ft., to cost approximately $200,000 with equipment. The structures will replace works recently destroyed by fire.

The Home Packing & Ice Co., Terre Haute, Ind., has completed plans for a one-story and basement addition, 65 x 145 ft., to cost about $55,000 with equipment. W. H. Floyd, 523 Ohio Street, is architect.

The Calumet Gas & Electric Co., Valparaiso, Ind., will make extensions and improvements in its local power station and system to cost about $110,000.

The Utensils Co., 303 East Columbia Street, Fort Wayne, Ind., A. W. Heit, president, manufacturer of metal utensils, has awarded a general contract to Max Irmscher & Son, First National Bank Building, for a new one-story plant, 60 x 230 ft., to cost $50,000 including equipment.

The City Council, Garrett, Ind., is planning to rebuild the municipal electric light and power house and install additional equipment at an estimated cost of $50,000.

W. J. Holliday & Co., 326 West Georgia Street, Indianapolis, iron and steel products, have awarded a general contract to Latham & Walters, State Life Building, for a two-story storage and distributing plant, 100 x 300 ft., with material-handling and conveying machinery, etc. An office building will be located on an adjoining site. D. A. Bohlen & Son, Majestic Building, are architects.

The Ivar Viehe-Naess Co., 400 North Michigan Avenue, Chicago, architect, has awarded a general contract to M. D. Heine, 3616 Jefferson Street, Gary, Ind., for a two-story and basement automobile service, repair and garage building, 125 x 125 ft., at Gary, to cost $150,000 with equipment.

Detroit

DETROIT, April 6.

PLANS are under way by the Pere Marquette Railroad Co., Grand Rapids, Mich., for the construction of a coaling plant at Ludington, Mich., to cost about $50,000. A pumping station and water supply system for locomotives will be installed at Baldwin, Mich., to cost $12,000.

The National Smelting & Refining Co., 1842 Illinois Avenue, Detroit, will erect a new plant at Ecorse, Mich., to cost $100,000 with equipment. Harry Greene is secretary and treasurer.

Ovens, power equipment, conveying and other machinery, will be installed in the proposed plant to be erected by the Kroger Grocery & Baking Co., 4760 Merritt Avenue, Detroit, in conjunction with a new general operating works, to be two stories, 235 x 350 ft., estimated to cost $150,000. J. G. Rastler & Co., Detroit Savings Bank Building, are architects.

The Stromberg Carburetor Co., 6645 Gratiot Avenue, Detroit, has plans for a two-story factory, 50 x 160 ft., estimated to cost $50,000. Smith, Hinchman & Grylls, Marquette Building, are architects.

The Means Stamping Co., Saginaw, Mich., has acquired the manufacturing rights to the tractor cultivator heretofore produced by the Merriman Cultivator Co., Deckerville, Mich. The company is said to be completing arrangements for carrying on manufacture at the Saginaw works.

The Board of Education, Grand Rapids, Mich., plans the installation of manual training equipment in the proposed two and three-story Button junior high and grade school at Buchanan and Butler Streets, estimated to cost $900,000, for which bids are being asked on a general contract until April 15. H. H. Turner, Michigan Trust Building, is architect.

The Jarvis Engineering Co., Lansing, Mich., is completing plans for a one-story addition to cost about $25,000 with equipment. The company specializes in the manufacture of grate bars and kindred products.

Reorganization plans have been arranged by interests which recently acquired the Commerce Motor Truck Co., Ypsilanti, Mich., with increase in capital from $200,000 to $500,000, to provide for expansion for motor truck and motor truck parts. E. W. Bassick, formerly head of the Bassick-Alemite Co., will be president; E. H. Graham, vice-president, and Edward S. Evans, treasurer.

Bass, Knowlton & Co., 312 North Meridian Street, Indianapolis, architects, have plans in preparation for a two-story and basement automobile service, repair and garage building at Detroit to cost $160,000, with equipment.

Pittsburgh

PITTSBURGH, April 6.

APRIL is not showing much improvement in machine tools sales over March, which was a good month with only one or two local houses. Opinions as to the business outlook are much modified compared with those of the latter part of last year, and there is now a tendency on the part of some who inquired for tools to hesitate before purchasing. So far this year single tool orders have been satisfactory and demand even now is good. The Bethlehem Steel Co. has been getting prices on several bar shears for the Johnstown plant, and the Carnegie Steel Co. is yet to buy a number of punches and shears for the Homestead works. The Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, constitutes another business lead in connection with extension at Creighton, Pa.

Contract has been let by the Demmler Brothers Co., 100 Ross Street, Pittsburgh, manufacturer of tin plate, to the B. A. Groah Construction Co., 347 West North Avenue, for a six-story and basement addition, 50 x 100 ft., to cost about $100,000. It will be primarily a storage and distributing plant. The Hunting-Davis Co., Century Building, is engineer.

Bids are being asked on a general contract until April 13 by the Pittsburgh File & Steel Co., McDonald, Pa., for its one-story plant, 45 x 355 ft., estimated to cost $100,000 with equipment. Frank McC. Crooks, 541 Third Avenue, Pittsburgh, is architect.

The Wetmore-Henderson Co., Warren, Pa., manufacturer of sash, doors and kindred millwork products, is considering rebuilding the portion of its planing mill recently destroyed by fire, with loss estimated at $100,000 including equipment.

The Board of Education, Morgantown School District, Morgantown, W. Va., plans the installation of manual training equipment in its proposed high school, estimated to cost $175,000. Bids have been asked on a general contract. Edward B. Lee, Chamber of Commerce Building, Pittsburgh, is architect.

The State Road Commission, Charleston, W. Va., has work in progress on a new plant at Nitro, W. Va., where a 5-acre tract recently was acquired, for the manufacture of metal automobile license tags. The works will replace a department formerly operated at the State industrial school for boys at Pruntytown, and equipment, in part, will be used from this school.

George W. Gerwig, secretary, Board of Public Education, Fulton Building, Pittsburgh, is asking bids until April 16 for one belt-sanding machine for the Ralston industrial school, and one 30-in. C. & P. paper cutter for the Peabody high school.

The Wheeling Art Metal Mfg. Co., East Wheeling, W. Va., contemplates rebuilding the section of its plant recently destroyed by fire. An official estimate of loss has not been announced.

Pacific Coast

SAN FRANCISCO, April 1.

TENTATIVE plans are under consideration by the Utah-Idaho Sugar Co., Salt Lake City, Utah, for a new mill at Chinook, Mont., with power house and machine shop, estimated to cost $1,500,000 with machinery.

The Turlock Irrigation District, Turlock, Cal., is planning the reconstruction of its machine shops recently destroyed by fire. An official estimate of loss has not been announced.

The San Joaquin Light & Power Corporation, Fresno, Cal., will construct a hydroelectric generating plant on the North Fork of the Kings River, about 50 miles from Fresno, estimated to cost $5,000,000 with transmission system. The station will be the first of a chain of hydroelectric power developments in this section. A. E. Wishon is vice-president and general manager.

The Titania Chemical Co., Glendale, Cal., plans the construction of a power house and machine shop in connection with its proposed plant estimated to cost $200,000 including machinery. The Moran Co., Room 6, Kerckhoff Building, Los Angeles, is architect.

R. D. and R. H. Caldwell, 739 Eleventh Street, San Bernardino, Cal., will build a two-story ice-manufacturing plant at 931 Second Street to cost $80,000 with equipment.

The Birchfield Boiler Co., Tacoma, Wash., manufacturer of boilers, tanks, and other products, is planning the erection of an addition, primarily for the production of heating boilers.

The Cascade Paper Co., Tribune Building, Tacoma, Wash., has obtained a site at Steilacoom, Wash., for a new pulp mill, with power house, machine shop, and other buildings, estimated to cost $200,000 with equipment. Frank S. Baker is president.

The Albertson Motor Car Co., 1540 Figueroa Street, Los Angeles, has awarded a general contract to C. T. McGrew & Son, 134 Ocean Avenue, Long Beach, Cal., for its proposed plant at Long Beach, two-stories, 100 x 300 ft., estimated to cost $200,000 with machinery. A loading dock, 300 ft. long, with freight-handling machinery will be built.

The Great Northern Railway Co., Troy, Mont., will soon begin the erection of a locomotive repair shop, including engine house, machine shops, power house and other buildings estimated to cost $150,000. Headquarters of the company are at St. Paul, Minn.

The Northern Board & Paper Co., Sumner, Wash., has plans for extensions in its mill, and the installation of a traveling crane and production machinery.

The Weyerheuser Timber Co., Tacoma, Wash., has acquired property at Longview, Wash., and plans the construction of a new mill, with power house, etc., to cost $350,000 including machinery.

Gulf States

BIRMINGHAM, April 6.

PLANS are under way for the construction of a one-story machine shop at the proposed power house of the Texas Power & Light Co., Dallas, at Malakoff, Tex. The company is arranging for the purchase of the municipal electric power plant at Lockhart, Tex., operated by the Citizens Water & Light Co., and plans extensions in this district, including equipment installation.

The Houston Oil Co. of Texas, Houston, Tex., is disposing of a note issue of $7,000,000, a considerable portion of the fund to be used for the construction of a pipe line from the Live Oak County fields to Houston, about 200 miles. The project will be carried out by the Houston Pipe Line Co., a subsidiary. E. H. Buckner is president.

The Lakewood Ice Co., Birmingham, recently organized, will build a one-story ice manufacturing plant at Sloss Avenut and Sixty-fifth Street, East Lake Station, 150 x 165 ft. S. F. Liebig is vice-president and manager.

The Common Council, Robert Lee, Tex., plans the installation of pumping equipment in connection with a proposed municipal waterworks estimated to cost $35,000.

The City Council, Cuero, Tex., plans the construction of a municipal electric light and power plant to cost $150,000. A bond issue is being arranged.

S. H. Bagnell, Port Gibson, Miss., has inquiries out for machinery for the manufacture of insulator pins and other wood products.

Fire, March 29, destroyed a portion of the plant of the Barrett Co., Fairfield, Ala., manufacturer of roofing, coal tar products, etc., with loss estimated at $125,000 including equipment. It is proposed to rebuild. Headquarters of the company are at Thirty-sixth Street and Grays Ferry Avenue, Philadelphia.

The Florida Mineralized Humus Co., Inc., Dundee, Fla., H. O. Roessling, manager, has inquiries out for a crawler type crane, about 35-ft. boom, with ½-yd. capacity clamshell bucket.

Fire, March 25, destroyed a portion of the saw mill and lumber plant of the Peavy-Moore Lumber Co., Deweyville, near Orange, Tex., with loss estimated at $250,000 including equipment. It is planned to rebuild.

The City Commission, Tuscaloosa, Ala., is considering the installation of pumping equipment in connection with proposed extensions in the municipal waterworks estimated to cost $175,000.

The Colossus Co., Shreveport, La., J. R. Russell, president, has acquired the plant and business of the Gulf Can Co. Plans are under way for extensions and the installation of equipment to develop an output of 10,000 cans per day.

The Dunnigan Tool & Supply Co., Panhandle, Tex., oil well equipment and supplies, has work in progress on a new building on West Second Street to cost $25,000.

The Crawford Motor Co., Main Avenue, San Antonio, Tex., has broken ground for a two-story service, repair and garage building on West Houston Street estimated to cost $65,000.

The Pierce Petroleum Corporation, 305 South Medina Street, San Antonio, Tex., is arranging for a new storage and distributing plant on the White Point Boulevard, Taft, Tex., to cost $160,000 including equipment.

The Atlantic Coast Line Railroad, Wilmington, N. C., is said to be completing plans for new repair shops at Tampa, Fla., in connection with terminal yard extensions at that point. It will include an engine house, 100-ft. turntable, machine shops, coaling plant, boiler house, etc., estimated to cost $300,000. A cinder hoist will be installed. J. E. Willoughby is chief engineer.

South Atlantic States

BALTIMORE, April 6.

WORK will begin on a four-story addition, 38 x 150 ft., at the plant of the Baltimore Spring Bed Co., 754-58 West Pratt Street, Baltimore, to cost about $40,000.

The Schmidt Motors Co., Randallstown, Md., has awarded contract to L. R. Andrews, Riderwood, Md., for a one and two-story service, repair and garage building, 100 x 100 ft., to cost $45,000. J. O. Schmidt is head.

The Martin Cotton Oil Co., Greenville, S. C., is considering tentative plans for rebuilding the portion of its mill destroyed by fire April 2 with loss reported at $50,000 including equipment. Conveying and other machinery will be installed.

Charles D. Briddell, 820 Main Street, Crisfield, Md., manufacturer of tools and mechanical equipment, plans for enlargements and the installation of machinery for the production of ice tools, woodworking tools, etc.

The purchasing agent, Post Office Department, Washington, is asking bids until April 15 for two portable floor cranes, capacity about 4000 lb.

The Yadkin River Power Co., Raleigh, N. C., is purchasing property in the vicinity of Buchanan Falls on the Pee Dee River, and is reported to have preliminary plans for a new hydroelectric generating station. The company has work under way on a new automatic substation in the Rockingham, N. C., district.

The Tolson Machine Works, Cheraw, S. C., has inquiries out for a portable boring mill for boring cylinders for large steam and gas engines.

The Southern Power Co., Charlotte, N. C., is completing plans for the construction of a hydrolectric generating station at Rocky Creek, Lancaster County, estimated to cost $1,000,000. A transmission line will be built. It is expected to have the station ready in from 12 to 15 months.

The Bureau of Supplies and Accounts, Navy Department, Washington, is asking bids until April 14 for 23,700 ft. steel wire rope and one steel wire towing hawser, for Eastern and Western yards, schedule 3530; until April 21 for one motor-driven air compressor for the Annapolis, Md., yard, schedule 3538; for 5400 lb. sheet copper for the Norfolk, Va., yard, and 600 lb. sheet copper and 4600 lb. phospher bronze for the Mare Island yard, schedule 3541; until April 28 for brass wire cloth, copper and iron wire cloth, for various yards, schedule 2547.

Lewter F. Hobbs, Inc., Monticello Avenue, Norfolk, Va., machinery dealer, has inquiries out for an air compressor, direct-connected to motor, complete with tank, etc.

The Hunter Heating Co., Frederick, Md., manufacturer of heating equipment, has tentative plans for extensions, including a one-story machine shop, one-story foundry, pattern shop and other structures.

Fire, March 29, destroyed a portion of the plant of the American Glass Co., Richmond, Va., manufacturer of bottles and other hollowware, with loss estimated at $200,000 including machinery. It is planned to rebuild.

The Waycross Ice & Cold Storage Co., Waycross, Ga., is completing plans for enlargements to increase the output about 100 tons per day.

In connection with the proposed rebuilding of its plant recently destroyed by fire the Williamson Brothers Veneer Co., Texas, Md., will acquire about three acres of land near Baltimore for the mill and power house. The recent loss approximated $150,000 with equipment.

L. R. Slaughter, Sharpsburg, Ga., is planning to purchase a large screw cutting lathe.

The Standard Electric Machinery Co., 9 East Hill Street, Baltimore, has inquiries out for a 75-hp. motor for hoist, hoist to have revolving drum and grids for regular duty, with or without brake; also an engine-driven generator set, 25 to 50 kw., and 6 to 8-ton ice machine, with accessory apparatus.

The United States Engineer, Savannah, Ga., will receive bids until May 1 for one 18-in. dredging pump and accessories for the dredge Cumberland, circular 234.

The Stuart A. Johnson Engineering Co., Realty Building, Savannah, Ga., has inquiries out for one stiff leg, all-steel derrick, about 10 tons capacity, with bull wheel and fittings.

The Brighton Mills, Inc., Passaic, N. J., plans the construction of a power house in connection with its proposed cotton fabric plant at Shannon, near Rome, Ga., estimated to cost $1,200,000.

The McAdoo Rubber Works, Randall and Westover Avenues, Richmond, Va., is in the market for a small calendar for rubberizing fabrics. Used equipment will be considered.

Canada

TORONTO, April 6.

WHILE orders for machine tools in this market continues in lots of one or two, chiefly for replacement purposes, a stronger demand is reported for general equipment for electric plants, pulp and paper mills and sewage and waterworks, with additional interest noted in mining equipment. During the past week the Hydro Electric System, Winnipeg, placed orders for 75 25-kw., and 25 50-kw. transformers with the Ferrani Mfg. Co., and 75 37½-kw. transformers with the Canadian General Electric Co. Dealers and builders also report a number of inquiries which are expected to turn into sales within the next few weeks. The demand for small tools is improving.

The Brompton Pulp & Paper Co. is having plans prepared for the construction of a mill at Bromptonville, Que.

H. A. Johnson, Truro, N. S., will start work immediately on the erection of a plant for the manufacture of steel ranges, stoves, etc.

The Capital Wire Cloth & Mfg. Co., Ottawa, Ont., is completing an addition to its plant at a cost of $20,000 and will shortly be ready for the installation of equipment.

The City Council, Quebec, will build a pumping plant to cost $50,000. M. Baillarge is engineer.

The Canadian International Paper Co., Ltd., Three Rivers, Que., is having plans prepared for a water power development plant on the Gatineau River, seven miles north of Hull, Que., estimated to cost $5,000,000. Address all communications to International Paper Co., 100 East Forty-second Street, New York.

Charles Barber & Sons, Meaford, Ont., have the general contract for a power house to be constructed at Mud Lake for the town of Haliburton, Ont., to cost $12,200. Piping, machinery, two generators, etc., will be purchased.

R. H. Cunningham & Co., London, Ont., manufacturers of electric furnaces, etc., will remove their plant and equipment to Sarnia, Ont. Roy Cunningham is president and general manager.

The Three Way Piston Ring Co. of Canada is installing equipment in its new plant at Hamilton, Ont. S. A. Bowman, manager, stated that production will start in the near future. The new works will replace the old plant at Simcoe, Ont.

The Thresher Dust & Fire Preventor Co., manufacturer of attachments for threshing machines, etc., will establish a manufacturing plant at Kitchener, Ont.

The Massey Concrete Products Co., Chicago, will start work within a few days on the erection of its proposed plant at Belleville, Ont., where it has secured a site of 22 acres. H. K. Harrison is manager of the Canadian branch of the company.

The Carthage Machine Co., Belleville, Ont., will make repairs and install some new equipment. It manufactures machines for the paper industry.

The Dominion Safety Locknut Co., Lachine, Que., will establish a plant and expects to be operating early in May. Officers include H. R. Snyder, president; J. P. Anglin, vice-president; F. B. Brown, treasurer; Edgar R. Perkins, secretary; J. M. Robertson and L. B. Kingston, directors.

The Petrolia, Ont., hydroelectric power plant was almost totally damaged March 29 when an overheated transformer exploded. All the equipment, wiring, bus bars, switches, and one transformer were entirely destroyed by fire. The loss will be repaired immediately.

The plant of Berry Bros., Inc., Walkerville, Ont., varnish manufacturer, was damaged by fire March 29 with a loss of $100,000. Frederick L. Colby is president.

Report of United Alloy Steel Corporation

Net income of the United Alloy Steel Corporation and subsidiary interests for 1924 was $713,839, after depreciation, Federal taxes, etc., compared with $3,072,365 in 1923. Comparative income account showed manufacturing profits of $2,629,060 against $5,365,420 in 1922. "Other income," however, was nearly three times as great as in the preceding year. The amount carried for surplus last year was $82,839 against $641,365 in 1923. Current assets at the close of 1924 were $14,921,561 and current liabilities $3,737,759, leaving net working capital practically identical to that of a year previous. Surplus account remained practically unchanged. President Edward A. Lengenbach, in his report to stockholders, said that net earnings in January and February of 1925 show a material improvement over the last half of 1924, but he holds a conservative view as to the volume of general business for second and third quarters.

NEW TRADE PUBLICATIONS

Single Phase Induction Motors.—Century Electric Co., St. Louis. Four-page folder dealing with induction single phase motors for household use, with particular reference to domestic refrigeration systems, house pumps and oil burners. Specific attention is paid to quiet operation, a wool-yarn system of lubrication, performance characteristics and general service reliability. The size illustrated is of ¼-hp.

Motor Maintenance Equipment.—The Martindale Electric Co., Cleveland. Catalog No. 6, showing method of operation and describing commutator slotting and grinding equipment, and various types of motor maintenance specialties. Illustrations are given of tools in use. Size, 16 pages, 5½ x 9 in.

Foundry Construction.—Austin Co., Cleveland. A 36-page illustrated catalog entitled "From Plans to Pour." Outlines the company's foundry service which includes industrial reports and appraisals, financing, plant layout, design, construction and foundry equipment and its installation. Sections and illustrations are devoted to material handling both inside and outside the foundry, charging systems, core making and handling, molding systems, ventilation and lighting, foundry equipment, steel and brass foundries, typical foundry layouts and combined foundries.

Refractory Linings.—Crescent Refractories Co., Curwensville, Pa. Binder containing a series of bulletins relating to fire brick. One bulletin contains a table by Prof. Albert Sauveur for quick temperature reckoning and conversion ratings. Another suggests a way of determining the temperature of a fire from its appearance and gives a table of melting points. Other tables show the number of 9-in. brick required for various circles, for boiler settings and for determining combinations for circular brick work, with special reference to blast furnaces and stoves. There are brief articles on the theory and principles of combustion, on working temperatures, on heat values and air requirements of fuels, and notes on furnace design.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.65c.
Toe-calk, ½ x ⅜ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c
Shafting and Screw Stock:	
Rounds	4.15c.
Squares, flats and hex	4.65c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.30c. to 4.45c.	.....
Nos. 22 and 24	4.45c. to 4.60c.	5.10c.
No. 26	4.50c. to 4.65c.	5.15c.
No. 28*	4.60c. to 4.75c.	5.25c.
No. 30	4.70c. to 4.95c.	.....

Galvanized

	Per Lb.
No. 14	4.70c. to 4.85c.
No. 16	4.85c. to 5.00c.
Nos. 18 and 20	5.00c. to 5.15c.
Nos. 22 and 24	5.15c. to 5.30c.
No. 26	5.30c. to 5.45c.
No. 28*	5.60c. to 5.75c.
No. 30	6.10c. to 6.25c.

*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Weld	Black	Galv.	*Wrought Iron*	Black	Galv.
⅛ in. Butt	46	29	⅛ in. Butt	4	+19
¾ in. Butt	51	37	¾ in. Butt	11	+ 9
1-3 in. Butt	53	39	1-1½ in. Butt.	14	+ 6
2½-6 in. Lap.	48	35	2-in. Lap	5	+14
7 & 8 in. Lap.	44	17	3-6 in. Lap	11	+ 6
11&12 in. Lap	37	12	7-12 in. Lap	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron,
72½, 25, 10 and 5 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c.
Annealed soft	4.50c.
Galvanized annealed	5.15c.
Coppered basic	5.15c.
Tinned soft Bessemer	6.15c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18⅛c. to 19⅛c.
High brass wire	18⅝c. to 19⅝c.
Brass rods	15⅞c. to 16⅞c.
Brass tube, brazed	26⅛c. to 27⅛c.
Brass tube, seamless	22¾c. to 23¾c.
Copper tube, seamless	23¾c. to 24¾c.

Copper Sheets

Sheet copper, hot rolled, 20½c. to 21½c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin

	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20
IC	$11.25	$8.85
IX	12.85	10.85
IXX	14.40	12.55
IXXX	15.75	13.85
IXXXX	17.00	15.05

Coke—14 x 20

	Prime	Seconds
80 lb.	$6.15	$5.90
90 lb.	6.30	6.05
100 lb.	6.45	6.20
IC	6.65	6.40
IX	7.85	7.60
IXX	9.00	8.75
IXXX	10.35	10.10
IXXXX	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	56c.
Bar	60c. to 63c.

Copper

Lake ingot	16¾c.
Electrolytic	16½c.
Casting	16 c.

Spelter and Sheet Zinc

Western spelter	9¼c.
Sheet zinc, No. 9 base, casks	12c. open 12½c.

Lead and Solder*

American pig lead	9½c. to 10c.
Bar lead	13c.
Solder, ½ and ½ guaranteed	38c.
No. 1 solder	36c.
Refined solder	28½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	18c. to 20c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	36c.

Old Metals

The market continues weak and shows further declines. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.50
Copper, heavy wire	11.00
Copper, light bottoms	9.25
Brass, heavy	6.75
Brass, light	5.50
Heavy machine composition	8.25
No. 1 yellow brass turnings	7.75
No. 1 red brass or composition turnings	8.00
Lead, heavy	6.75
Lead, tea	5.00
Zinc	4.00
Cast aluminum	17.00
Sheet aluminum	17.00